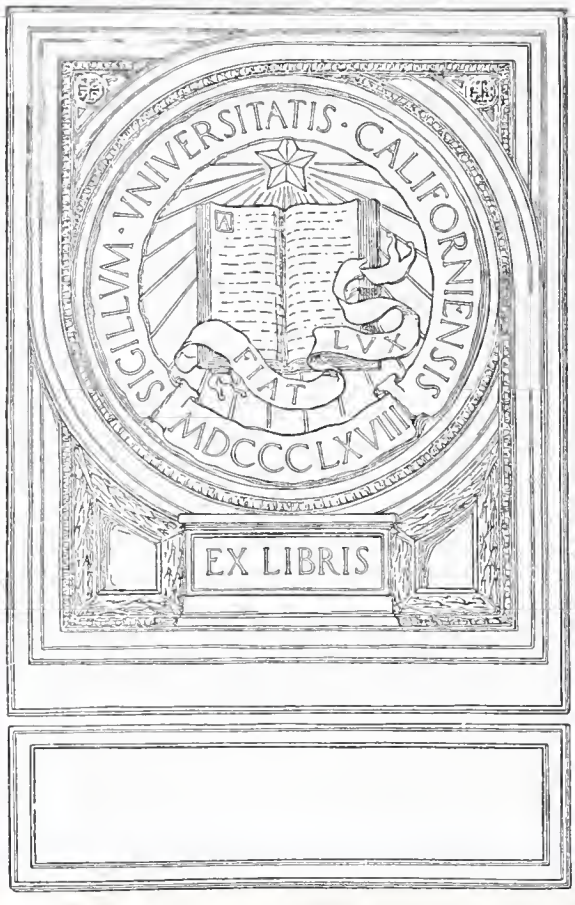
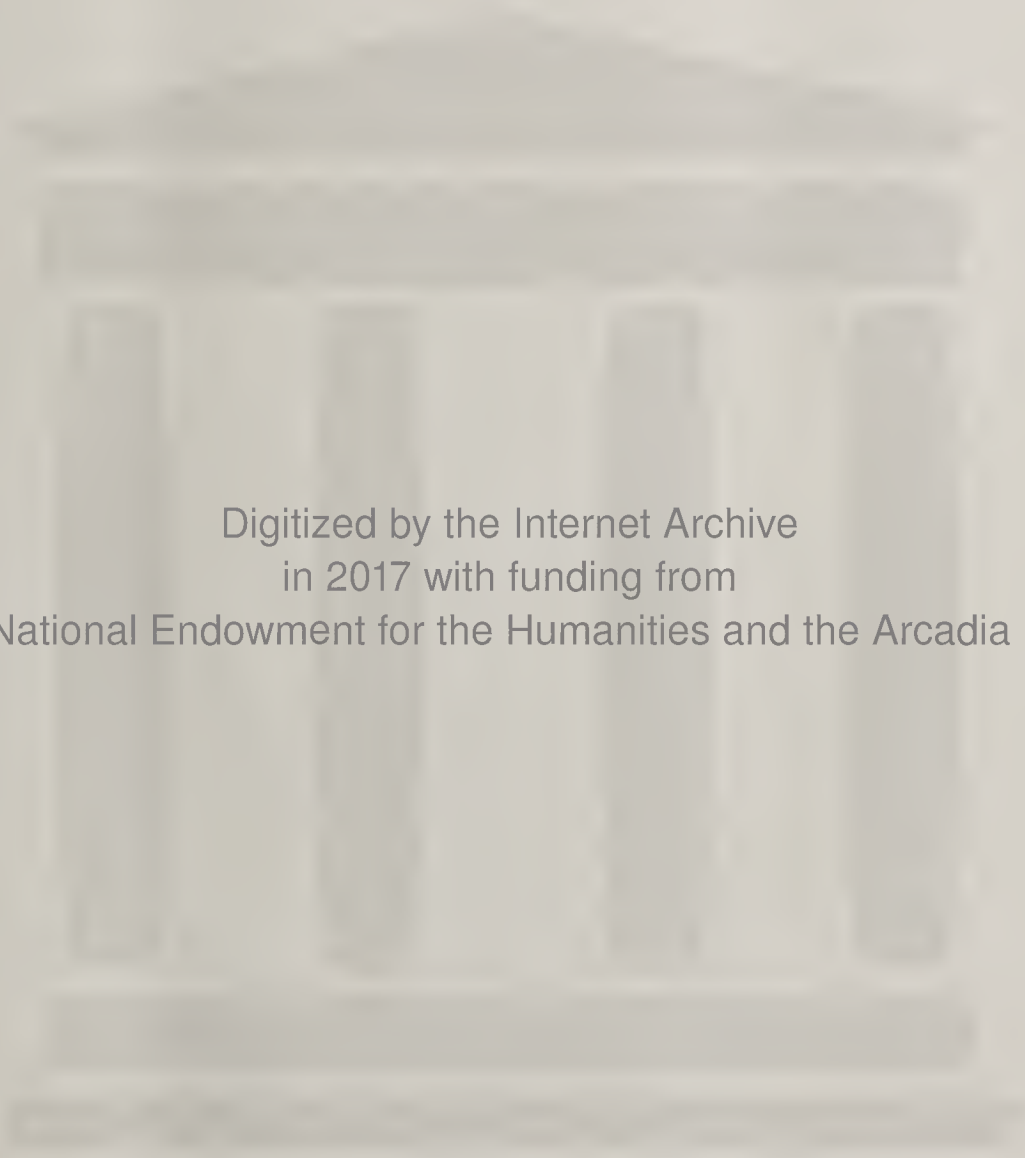
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THE JOURNAL OF THE Arkansas MEDICAL SOCIETY

Vol. 61 No. 1

FORT SMITH, ARKANSAS

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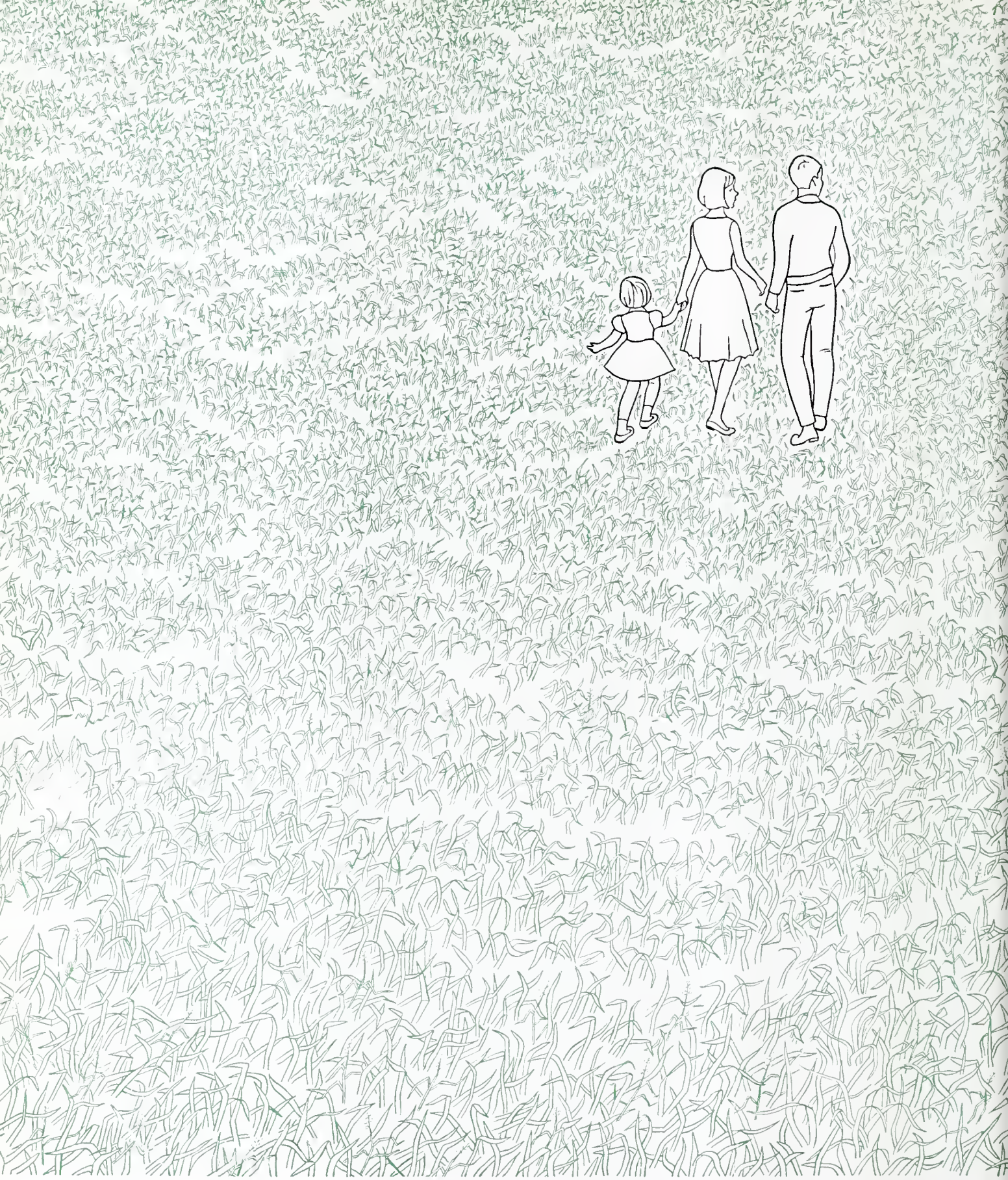
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NEWS—Our readers are requested to send in items of news, also marked copies of newspapers containing matter of interest to the membership.

88th ANNUAL SESSION

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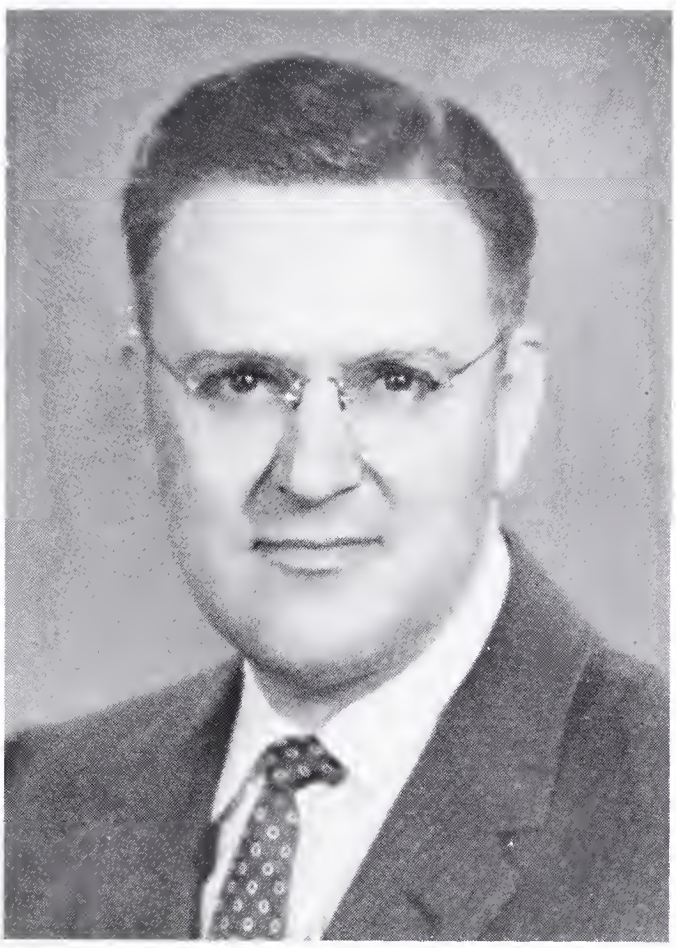
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E. Randolph Ellis

Malvern

President

Arkansas Medical Society

1964-1965

THE JOURNAL OF THE Arkansas MEDICAL SOCIETY

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VOLUME 61 • JUNE, 1964 • NUMBER 1

PROCEEDINGS

88th Annual Session

ARKANSAS MEDICAL SOCIETY

Arlington Hotel — Hot Springs

May 3-6, 1964

FIRST MEETING
HOUSE OF DELEGATES
3:30 p.m., Sunday, May 3, 1964
Fountain Room, Arlington Hotel

Speaker C. Lewis Hyatt called the meeting to order in the Fountain Room of the Arlington at 3:30 p.m. and requested that Joe Norton of Little Rock give the invocation.

William A. Snodgrass introduced his guest, Dr. L. Vincent Gorrilla of Los Angeles, California.

Mr. Schaefer called the roll of delegates. The following delegates and members seated as delegates by action of the House were present:

ARKANSAS, R. H. Whitehead, Sr.; BAXTER, Fred Hargrove; BENTON, J. D. Huskins; BOONE, Henry V. Kirby; BRADLEY, G. F. Wynne; CRAIGHEAD-POINSETT, Charles G. Swingle, A. C. Modelevsky, Glen Keller; DESHA, Lee Parker; DREW, C. Lewis Hyatt; FRANKLIN, Wm. C. Hensley; GARLAND, Vernon E. Sammons, Ronald J. Bracken, John Dodson; GRANT, Curtis Clark; GREENE-CLAY, O. E. Bradsher; HEMPSTEAD, J. W. Branch; HOT SPRING, R. H. White; JEFFERSON, Ross E. Maynard, Charles W. Reid; JOHNSON, James M. Kolb; LAWRENCE, J. B. Elders; LOGAN, W. D. Jones; MILLER, J. W. Harrison; OUACHITA, Perry Dalton; PHILLIPS, L. J. Pat Bell; POLK, Calvin Austin; POPE-YELL, Roy Millard; PULASKI, Amail Chudy, David Cheairs, W. S. Lewis, Hal Black, Julian Foster, T. Duel Brown, Fred Berry, Lee Martin, J. O. Porter, James Flack; SEBASTIAN, Clarence Glenn; A. S. Koenig; C. T. Chamberlain; SEVIER, R. C. Dickinson; UNION, W. S. Rainwater; WASHINGTON, Thomas Gray, Wendall Ward; WHITE, Wm. J. Mattox. COUNCILORS Paul Ledbetter, Hugh R. Edwards, Paul Gray, Thomas E. Townsend, H. W. Thomas, George C. Burton, John P. Wood, Karlton Kemp, Joe Norton, Stanley Applegate, C. C. Long, L. A. Whittaker. OFFICERS, President-elect C. R. Ellis; Secretary Elvin Shuffield, Treasurer Ben N. Saltzman; Second Vice President A. E. Andrews. PAST PRESIDENTS Wm. A. Snodgrass, James M. Kolb, W. R. Brooksher, Louis K. Hundley, and R. C. Dickinson.

Speaker Hyatt called for a report from the Credentials Committee. Amail Chudy, chairman of the committee, reported that a quorum was present.

Upon the motion of Millard and Keller, the House adopted the minutes of the 87th Annual Session as published in the June 1963 issue of the Journal of the Arkansas Medical Society.

The Chairman of the Constitutional Revisions Committee, Louis K. Hundley, read the following supplemental Report:

Supplemental Report of the Constitutional Revisions Committee

By direction of the Council, the Committee recommends the following change in the By-Laws:

CHAPTER VIII of the By-Laws, Section 1, Paragraph (A), Sub-Paragraph "3", which is Committee on Public Health. We suggest the following addition to the sub-paragraph:

Sub-Committee on Liaison with the Nursing Profession. The Society presently has a Council-appointed Committee on Liaison with the Nursing Profession. As a Council Committee, the membership does not change and the com-

mittee is not subject to the rules of the committees of the Arkansas Medical Society. The Council and the Constitutional Revisions Committee feel that it is important that this committee be made a standing committee of the Society.

This proposed amendment is presented for the first reading, will be printed in the Journal of the Arkansas Medical Society twice during the coming year, and will be read at the 1965 Annual Session for final action.

Speaker Hyatt referred the Supplemental Report to Reference Committee Number One.

The Chairman of the Committee on Medical Legislation, Elvin Shuffield, read the report of his committee. Speaker Hyatt referred the report to Reference Committee Number Two.

Speaker Hyatt called the attention of the House to the meetings of the Reference Committees and announced that Perry Dalton would serve on Committee Number One, substituting for John P. Price.

Speaker Hyatt also announced that elections would be held immediately following adjournment of the House of Delegates to select nominees for positions on the Arkansas State Board of Health and the Arkansas State Medical Board.

A. S. Koenig, representing the Sebastian County delegation, presented the following proposed amendments to the Constitution and By-Laws, as instructed by the Sebastian County Medical Society:

Constitutional Amendment Proposed by Sebastian County Delegation

Amend Article VIII of the Constitution, Section 2, and Article IX, Section 1, by substituting the words "executive vice president" for the words "executive secretary".

Amend the By-Laws, Chapter VI, Section 5, and CHAPTER VI, Section 9, by substituting the words "executive vice president" for the words "executive secretary".

Dr. Koenig praised the executive secretary and said this change of title would be recognition of the respect his work had brought the office.

The proposed amendment was referred by Speaker Hyatt to Reference Committee Number One. The Speaker announced that the selection of the nominating committee for election of officers would be made. Delegates from the various councilor districts held meetings on the floor and selected the nominating committee as follows: First District, Charles Swingle; Second District, Hugh Edwards; Third District, L. J. Pat Bell; Fourth District, Louis Hundley; Fifth District, George Burton; Sixth District, R. C. Dickinson; Seventh District, R. H. White; Eighth District, Amail Chudy; Ninth District, Stanley Applegate; Tenth District, James M. Kolb.

The meeting adjourned at 4:30 p.m.

UROLOGY SECTION MEETING
4:30 p.m., Sunday, May 3, 1964

The Urology Section met for a scientific pro-



President Verser presents an American Medical Association Education and Research Foundation check in the amount of $7,841.86 to Dean Winston K. Shorey of the University of Arkansas Medical Center for use of the Center, May 5, 1964.



Dr. Randolph Ellis, having been sworn in as president, displays a plaque of appreciation from the Society which he is about to present to out-going president Dr. Joe Verser, May 5, 1964.

gram in Cafe 2 of the Arlington Hotel on Sunday afternoon. Ormond Culp of the Mayo Clinic, Rochester, Minnesota, was guest speaker.

FIRST SCIENTIFIC SESSION
Monday, May 4, 1964

The first scientific session opened in the Ballroom of the Arlington Hotel with the showing of the following films: "Early Plastic Repair of Finger Tip Injuries of Children"; "Obesity — Some Highlights of Management".

A panel program on "Differential Diagnosis and Management of Pulmonary Lesions" which began at 9:00 a.m. was co-sponsored by the Association of Tumor Clinic Staff Members in Arkansas. Guy R. Farris, Little Rock, First Vice President, presided and introduced Harley C. Darnall of Fort Smith who served as moderator of the panel program. Watts R. Webb of Dallas; John R. McDonald of Detroit; Harry Z. Mellins of Brooklyn; and Glen Radcliffe of Houston presented papers on the subject and answered questions from the audience.

PRESIDENT'S ADDRESS

President Joe Verser of Harrisburg made his address to the members of the Society at 11:45 a.m. on Monday, May 4th, in the Ballroom of the Arlington Hotel.

SECOND SCIENTIFIC SESSION
Monday, May 4, 1964

The second scientific session convened at 1:30 p.m. on Monday, May 4th, in the Ballroom of the Arlington Hotel with A. E. Andrews, Jr., Second Vice President, presiding. A panel program on "The Ferreting Out and Management of Urologic Disease in Children" was moderated by Sam Jameson of El Dorado. The following specialists participated in the panel discussion: Ormond Culp of Rochester; Warren Dodge of Galveston; O. L. Forbis, Jr., of Little Rock; and Weldon Rainwater of Blytheville. A question and answer period followed the lectures.

FIFTY YEAR CLUB BREAKFAST

Members of the Fifty Year Club of the Arkansas Medical Society were honored with a breakfast in the Montagu Room of the Arlington Hotel on Tuesday morning, May 5th. The following members of the club were present: E. J. Chaffin, Hughes; E. M. Gray, Mountain Home; R. C. Dickinson, Horatio; Stanley M. Gates, Little Rock; A. D. Cathey, El Dorado; D. C. Lee, Hot Springs; E. A. Purdum, Hot Springs; H. King Wade, Sr., Hot Springs; W. A. Fowler, Fayette-



The Society's annual Fifty Year Club Breakfast was attended by D. C. Lee of Hot Springs, A. D. Cathey of El Dorado, E. A. Purdum of Hot Springs, R. C. Dickinson of Horatio, H. King Wade, Sr., of Hot Springs, J. H. McCurry of Cash, E. M. Gray of Mountain Home, W. H. Mock of Prairie Grove, Wm. H. Moreland of Tyronza, E. J. Chaffin of Hughes, Joe F. Shuffield of Little Rock, W. H. Fowler of Fayetteville, May 5, 1964.

ville, Will H. Mock, Prairie Grove; Wm. H. Moreland, Tyronza. Also present were: W. A. Snodgrass, Jr., T. D. Brown, Joe F. Shuffield, all of Little Rock; L. H. McDaniel of Tyronza; and James M. Kolb, Sr., of Clarksville.

THIRD SCIENTIFIC SESSION

Tuesday, May 5, 1964

Beginning at 8:00 a.m. on Tuesday, May 5th, the following scientific films were shown in the Ballroom of the Arlington Hotel: "Smoking", "Venomous Snakes", and "Closed Chest Cardiac Resuscitation". Two panel programs were presented simultaneously, beginning at 9:00 a.m. The Third Vice President of the Society, W. A. Fowler of Fayetteville, presided at the meeting in the Ballroom and introduced William I. Porter of Little Rock as moderator of a panel on "Differential Diagnosis and Management of Headaches". Appearing on the panel were: Ted Clemens, Jr., of Oklahoma City; Ben H. Senturia of St. Louis; Charles S. Betts of Little Rock; and William I. Porter of Little Rock.

The Second panel subject was "Obstetric and Gynecologic Emergencies". Willis E. Brown of Little Rock served as moderator of this program in the Fountain Room of the Arlington. Panel participants were: J. Travis Crews of Little Rock; James Hagler of Little Rock; Douglas M. Haynes of Louisville; Byron Hawks of Little Rock; Harold A. Kaminetzky of Chicago. Following intermissions, there were discussion periods for both panel subjects.

MEMORIAL SERVICE

The joint Society-Auxiliary Memorial Service was held in the Ballroom of the Arlington Hotel, beginning at 11:45 a.m. on Tuesday, May 5th, with the Society president, Joe Verser, presiding. Invocation was by Joe Reid of Arkadelphia.

Mrs. Hoyt Choate read the names of the deceased members of the Auxiliary:

Mrs. R. C. Dorr, Batesville
Mrs. Victoria Saylors, Batesville
Mrs. Oscar Gray, Sr., Little Rock
Mrs. Virgil Kennedy, Fort Smith
Mrs. W. A. Kriesel, Little Rock
Mrs. Henry M. Owen, Little Rock

President Verser read the names of the deceased members of the Society:

Shelby Atkinson, North Little Rock, March 24, 1964

E. J. Byrd, Camden, December 25, 1963

Charles B. Dixon, Van Buren, June 30, 1963

Robert M. Eubanks, Little Rock, January 17, 1964

L. T. Evans, Batesville, October 3, 1963
Hugh M. Fogo, Harrison, April 27, 1963
James D. Gardner, Fort Smith, April 28, 1963
John S. Hendricks, DeQueen, February 7, 1964
H. Fay H. Jones, Little Rock, May 23, 1963
John H. Kilgore, Sr., Pine Bluff, April 6, 1964
B. Ainsworth Kuehne, Little Rock, December 29, 1963
Walter A. Nowlin, Roland, April 11, 1964
Earle W. Pearson, Little Rock, June 10, 1963
Julius K. Sheppard, El Dorado, September 14, 1963
David Sinton, Little Rock, January 23, 1964

The Memorial Address was made by Amail Chudy of North Little Rock:

MEMORIAL ADDRESS

The end of man is too easily thought of, even by the Christian mind, as a time when the body departs from the soul, namely, death. This concept is brought on by the very fact that there is not placed into this subject a deep-enough insight into its real meaning. It is unconstrained to place it in a category of modern language and just to think of it as death. There is a far more proper title to this short phrase, which can be brought about by a little thought, sound reasoning, and analysis of the subject. Every being acts toward an end that is the completion of his desire, or the reaching of his destiny; be it a trip to Chicago or just the moving of a stone, this very completion of the act is the end towards which it was directed. "Every agent acts for an end. It is called the principle of Finality, it is a principle of knowledge". From this we can see, in part at least, that the end of man is not yet complete, so his end is not reached until it has obtained a complete state of happiness, where there is no craving for anything further; when man has



The new Council and officers of the Arkansas Medical Society for the year 1964-1965. Standing, (left to right) Councilors L. J. Pat Bell of Helena, George Burton of El Dorado, Ross Fowler of Harrison, Hugh R. Edwards of Searcy, Karlton Kemp of Texarkana, Eldon Fairley of Osceola, T. E. Townsend of Pine Bluff, Stanley Applegate of Springdale, John Wood of Mena, Jack Kennedy of Arkadelphia. Seated, (left to right) Councilors L. A. Whittaker of Fort Smith, Paul Gray of Batesville, Secretary Elvin Shuffield of Little Rock, President Randolph Ellis of Malvern, Chairman of the Council H. W. Thomas of Dermott, President-elect C. Lewis Hyatt of Monticello, Treasurer Ben N. Saltzman of Mountain Home, Mr. Paul C. Schaefer, Executive Secretary, Fort Smith, May 6, 1964.

reached his heaven and sees his Author face to face. The end of a thing is the object to which it is directed; the end of an arrow is the target. The end of man is that state where he has reached his top, where there is no more desire to go further. "Every agent acts either by nature or intellect." In animal it is the natural end, that toward which it strives—food, reproduction, and so on. In man, the end is a Supernatural one, the end to be in a perfect state of happiness, and this can only be obtained in heaven. "Good is the object of every appetite." If an agent did not act for any definite effect, all effects would be indifferent to it. This one must admit from the standpoint of reason, for if everything did not act for a definite effect an acorn could become a man instead of an oak tree. So it is here seen that the end of an object is to reach complete content, and man cannot be content with this world, for even the scientist who makes the discovery that has been his object for years soon finds another problem that confronts him.

"The end of man, in the full sense, would mean a good thing in which a man could find complete and absolute happiness and perfection of all his capacities."

Man's end cannot be of this world for never has it been known, nor will it come about, that man will have no more desires for happiness. "All admit that happiness is a perfect good, or else it would not bring rest to the appetite. Now perfect good is that which is holy free from any admixture of evil." Here in the words of Thomas Aquinus lies proof that man's end is not of this world. A man can have almost a complete state of happiness only to awaken the next day to find his fortune gone, or that death has taken a loved one; thus his "false" happiness is destroyed. As long as a thing is in motion towards perfection, it has not reached its last end, for this would be perfection itself. "Be glad and rejoice, for your reward is very great in heaven." Thus, from the Bible comes proof that our reward is in heaven. It is reasonable to understand that God has destined us to a supernatural end, for our end is to rejoice in and with HIM. If he had not laid a foundation for us to be with Him, there would be no stimulus for us to act in the direction of an end, our actions would be indifferent. Now God, in giving this power, left it up to man to construct the building that he has laid the foundation for. Man is bestowed with three virtues—



The head table at the Annual President's Banquet. Left to right, Dr. and Mrs. Elvin Shuffield of Little Rock, Dr. and Mrs. Randolph Ellis of Malvern, Dr. and Mrs. Joe Verser of Harrisburg, Dr. and Mrs. H. W. Thomas of Dermott, Dr. and Mrs. Tom Burrow of Hot Springs, May 5, 1964.

faith, hope and charity. These three virtues help us to attain our end. For it is by *faith* that we believe, by *hope* we are always wanting to go on and by *charity* we can love God. The act of love may escape man but hope and faith can only be lost by direct actions against them. Just as man invests his resources here in this world to better himself, so too should we invest our supernatural resources to gain a better and higher reward toward our complete state of happiness with God. Good works or meritorious actions also add new and more abundant graces. "Brethren, labor the more that by good works you may make sure of your calling and elections," words of Peter. It has been shown *clearly* that the end of man is *not* of this world. In fact, it has been defined and proved and a short regard given to its means. Now, let us try to get, as far as the human mind can penetrate into this final glory, a "picture" of the eternal happiness. "Come ye blessed of my Father, possess the Kingdom prepared for you from the foundation of the world." Heaven is gained! You are saved! What human mind could possibly conceive the immensity of the joy that will flood their glorified soul at the moment when they behold for the first time the glorified image of Our Divine Saviour and hear from His blessed lips the gracious invitation to take possession of the eternal throne of matchless glory that they have prepared for themselves by their fidelity in the vineyard of His service. The angels have congratulated them on their successful termination of their probation period on this earth, and bless God that another is added to their army. And, finally, when amidst the unanimous applause of the whole heavenly court, Jesus Christ, whom they served so faithfully during their life, shall conduct them to their throne and place on their brow the brilliant crown of immortal glory, they now begin to understand the full significance of God and His Kingdom. To try to see heaven with our senses would be in the same degree of comparison as to try to conceive a most beautiful work of man in an elaborate landscape by closing the eye and straining the ear to gain this concept. What tongue can tell, what mind can see, the exquisite pleasure derived from the enjoyment of their exalted degree of the essential light of glory, beatific-vision, the end of man.

We loved them, yes, we loved them,
But Jesus loved them more,



Dr. Randolph Ellis makes his speech accepting his duties as president of the Arkansas Medical Society, May 5, 1964.

And He has sweetly called them
To yonder Shining Shore.
The golden gates were opened
And a gentle voice said, "Come",
And with farewells kindly spoken,
They calmly entered home.

Following the Memorial Address, the Arkansas College Lassies, sang "Lift Thine Eyes" by Mendelssohn, directed by Mrs. Paul Gray. Benediction was by Dr. Reid.

SPECIALTY SECTION MEETINGS
EYE, EAR, NOSE AND THROAT

The E.E.N.T. Section held an all-day meeting in Cafe 2 of the Arlington Hotel on Tuesday, May 5th, with Section Chairman H. A. Ted Bailey presiding. The following scientific program was presented: "Retinal Detachment", Morriss Henry, Fayetteville; "Surgical Consideration of the Eye", Jack S. Guyton, Detroit; "Use of Canal Skin and Vein for Closure of Tympanic Membrane Perforations", H. A. Ted Bailey, Little Rock; "Otitis Media Effusion, Etiology and Treatment", Ben H. Senturia, St. Louis.

JOINT LUNCHEON MEETING OF PEDIATRICS AND OBSTETRICS-GYNECOLOGY SECTIONS

The Sections on Pediatrics and Obstetrics-Gynecology held a joint luncheon meeting on



Dr. Joe Verser, president, addresses the opening general session of the Arkansas Medical Society, Monday, May 4, 1964.

Tuesday, May 5th, in the Terrace Room of the Majestic Hotel. After lunch, the following talks were presented: "Perinatal Problems from Obstetric Standpoint", Byron Hawks, Little Rock; "Perinatal Problems from Pediatric Standpoint", Alice G. Beard, Little Rock. There was also a question and answer period on Perinatal Problems moderated by John B. Nettles of Little Rock. Alice G. Beard of Little Rock, Douglas M. Haynes of Louisville, Byron L. Hawks of Little Rock, Harold A. Kaminetzky of Chicago, Warren F. Dodge of Galveston, and Thomas E. Townsend of Pine Bluff.

OBSTETRICS-GYNECOLOGY SECTION

Immediately following the joint meeting with the pediatricians, the Obstetric-Gynecology section held a separate scientific session in the Mayfair Room of the Majestic Hotel. The following program was presented: "Diagnosis and Management of Recurrent Carcinoma of the Cervix", Douglas M. Haynes, Louisville; "Office Curettage and Pitressin Conization of Cervix", Wayne Workman, Blytheville; "Simplified Obstetric and Gynecologic Care", Harold A. Kaminetzky, Chicago; "Radiation Response and Resistance in Cervical Carcinoma", Arthur Hoge, Fort Smith.

PEDIATRICS

After the joint session with the Obstetrics-Gynecology Section, the Pediatrics Section met for the following separate scientific program:

"Iron Intoxication in Children", Francis M. Henderson, Stuttgart; "Acute Glomerulonephritis—Newer Concepts", Warren Dodge, Galveston; "Ultraviolet Light and Human Disease", Roselind Abernathy, Little Rock; "Acute Leukemia in Children – Newer Approaches to Therapy", Daisilee Berry, Little Rock.

RADIOLOGY

The Arkansas Radiological Society met for luncheon on Tuesday, May 5th, in the Banquet Room of the Arlington Hotel with Harry Z. Mellins of Brooklyn as guest speaker.

GENERAL PRACTICE

The Arkansas Academy of General Practice met for a luncheon and scientific program on Tuesday, May 5th, in the Velda Rose Motel. Joe B. Hall of Fayetteville discussed "New Aspects of Practical Treatment of Medical Diseases".

INTERNAL MEDICINE

The Section on Internal Medicine held a luncheon on Tuesday, May 5, in the Velda Rose Motel with Ted Clemens, Jr., of Oklahoma City as guest speaker. His topic was "The Problem of Occult Gastrointestinal Bleeding".

ORTHOPEDICS

The Arkansas Orthopedics Society met for luncheon and a business meeting on Tuesday, May 5, in the Skyview Room of the Velda Rose Motel.

ORTHOPEDICS-INTERNAL MEDICINE JOINT SCIENTIFIC SESSION

A combined meeting of the orthopedics-medicine sections was held Tuesday afternoon at the Velda Rose. The program consisted of a symposium on "The Surgical and Medical Management of Rheumatoid Arthritis". Speakers were: Mack Clayton and Charley Smyth, both of Denver.

COCKTAIL PARTY
Tuesday Evening, May 5th, 1964

A cocktail party was held on Tuesday evening from 6:00 to 7:00 p.m. at the swimming pool deck on the mountain-side adjoining the Arlington Hotel. Prizes were awarded to the winners of the

golf tournament. Walter Klugh, Jr., of Hot Springs was first-place winner; H. L. Wineland of Pine Bluff was first runner-up and Elbert H. Wilkes of Hot Springs was second runner-up.

PRESIDENT'S BANQUET
Tuesday Evening, May 5th, 1964

A lavish buffet was provided for the Annual President's Banquet at 7:00 p.m. on Tuesday in the Main Dining Room of the Arlington Hotel. Joe Verser, president, presided and introduced the honor guests of the Society and the principal officers. On behalf of the American Medical Association Education and Research Foundation, he presented a $7,841.86 to Winston K. Shorey, Dean of the University of Arkansas Medical Center.

Dr. Verser introduced the past presidents in attendance, who stood for the installation of the new president. Dr. Verser administered the oath of office to Dr. C. Randolph Ellis of Malvern, installing him as president of the Arkansas Medical Society.

Dr. Ellis made the following remarks in accepting the presidency:

"Dr. Verser, past presidents, officers and members of our Society, and guests, it is with very humble pride that I assume the duties of this office tonight—knowing full well my own limitations but trusting that, with the earnest assistance of each one of you, we can accomplish much during the next year. We can consolidate our thinking, combine our efforts, and together march into the future of a changing medical world.

As your president-elect, I have contacted all councilors and some committeemen about members of our Society who will expend earnest effort in behalf of any phase of our organization. As your president, I am now making appointments to committees. I implore each of you to not only accept the appointment but also to work at the task diligently. I have explained to some of our local physicians that I might need some friends at the end of this year. Why? Because I shall be calling or writing committee chairmen, and they, in turn, will be contacting you for more activity.

This is your Arkansas Medical Society. Why not help run it?

It might be well here to relate a story of my first activity in the Society. I was a visitor at an open legislative committee meeting, I believe, when I voiced an opinion with which one of the



Dr. Verser presents the gavel to Dr. Randolph Ellis as a symbol of his ascendency to the office of president of the Arkansas Medical Society, May 5, 1964.

Society officers disagreed rather violently and stated so to the group. My immediate reaction was just as you would expect—I was rather chagrined. I wanted a hole to sink into. However, my reaction changed within a few minutes. I had no more opinions that day but thought to myself, "Doctor, I am just as much a member of this Society as you are and will make it my business to know more facts to substantiate my opinions in the future." That physician became a very good friend. He only yesterday learned of the stimulus he had given me. Allow me to repeat: This is your Society. Help us run it.

In the address of Dr. Leroy E. Burney to the graduating class of our medical school last June, he admonished us not to back into the future but to face a changing society, and as organized medicine, march confidently into the future. Although I do not agree with all of Dr. Burney's thoughts as expressed in this address, I do accept this indictment of "backing into the future" and urgently request that we as a group face the changing social aspects of medicine just as we have so well used the scientific changes during the last few decades. In facing these changes and leading the way in the solution to the problems so created, we must hold fast to certain funda-

mental concepts.

First, we must forever allow our patients the free choice of a qualified physician. This includes the freedom to change physicians or groups of physicians even during an acute illness after properly discharging or relieving the present physician on the case. This must even allow the patient to choose a physician outside any group to whom he is paying an insurance premium, such as in "closed panel" medical groups.

Secondly, we must always keep physicians free to practice the science and art of medicine, restrained only by the esteem, consultation, and opinion of colleagues.

A corollary to this is the simple fact that it is not only a duty but also a privilege to train and police ourselves and those entering our ranks from medical schools, internships and residencies. It is equally incumbent upon us to do the same for any practicing physician who desires further privileges in our clinics and hospitals.

The physician today should be limited only by his interests, intelligence, ambitions, and ideals, *plus* the encouraging supervision and teaching of a fellow physician. May I repeat a statement I made to the Arkansas Academy of General Practice in 1955? "May it never be true that a physician failed to reach his fullest usefulness because a colleague, whether general practitioner or specialist, refused that encouraging supervision which we all need at times regardless of the heights of our proficiency." I still hold to this concept.

Thirdly, we must always keep our patients' medical records in strictest confidence unless requested to do otherwise by the patient himself or a court of law. You have, no doubt, noticed in the news within the last few weeks that the physicians in one country were requested by law (not a court) to violate that confidence. We are having social changes in the practice of medicine proposed almost daily. These are made by groups of physicians, insurance carriers and government agencies. We must encourage certain forms of group practice and must work with insurance companies in supplying good medical care to our citizens at a reasonable budgeted cost; however, regardless of the form of change in one practice or the agent proposing it, we must forever keep the patient and the physician free to agree on examination procedures, therapy, and fees. We must continue to hold his medical records in strictest confidence.

I began by stating that it gave me pride to accept this office. But as I wrote this I thought of a hymn used in our service of the First Baptist Church two Sundays ago. I quote two of the verses:

"When I survey the wondrous Cross on which the Prince of Glory died,
My richest gain I count but loss and pour contempt on all my pride,
Were the whole realm of nature mine, that were a present far too small,
Love so amazing, so divine, Demands my love, my life, my all.

I repeat, please, that it is with pride and humility that I assume this office. I plead with you to join with your officers in marching confidently into the future of medicine, ready and willing to meet any problems, solving them in the atmosphere of our present day scientific and social order, but holding steadfastly to our medical heritage of freedom for both the patient and the physician."

Dr. Ellis presented a plaque to Dr. Verser commemorating his year of service as president of the Arkansas Medical Society and expressing the Society's appreciation for Dr. Verser's work in behalf of organized medicine.

Dr. Ellis introduced Berl Olswanger who presented an entertaining floor show.

PAST PRESIDENTS' BREAKFAST

The past presidents of the Arkansas Medical Society were honored at breakfast in Cafe 2 of the Arlington Hotel on Wednesday morning, May 6th.

FINAL MEETING
HOUSE OF DELEGATES
May 6, 1964

Speaker C. Lewis Hyatt called the House of Delegates to order at 10:00 a.m. on Wednesday, May 6, 1964, in the Ballroom of the Arlington Hotel. He called on Past President Will H. Mock for the invocation.

Secretary Elvin Shuffield called the roll of delegates. The following delegates and members seated as delegates by action of the House were present: ARKANSAS, R. H. Whitehead, Sr.; BAXTER, Fred Hargrove; BENTON, J. D. Huskins; BOONE, Henry V. Kirby; BRADLEY, G. F. Wynne; CHICOT, Byron Z. Binns; CLEBURNE,

James C. Barnett; CRAIGHEAD-POINSETT, Glen Keller, Horace Barnett, Joe Verser; GARLAND, John Dodson; GREENE-CLAY, O. E. Bradsher; HOT SPRING, R. H. White; INDEPENDENCE, J. J. Monfort, Chaney W. Taylor; JEFFERSON, Ross E. Maynard, Charles W. Reid; JOHNSON, Guy Shrigley; LAFAYETTE, Robert W. Hunter; LEE, Dwight W. Gray; LOGAN, W. D. Jones; MILLER, Karlton Kemp; MISSISSIPPI, F. E. Utley; NEVADA, Charles Hesterly; OUACHITA, Perry Dalton; PHILLIPS, L. J. Pat Bell; POPE-YELL, Roy Millard, Charles Wilkins; PULASKI, Amail Chudy, W. S. Lewis, Hal Black, Julian Foster, T. Duel Brown, Guy Farris, Frederick Berry, Lee Martin, Charles Henry, John Herron, James Flack, William A. Snodgrass; SEBASTIAN, Clarence Glenn, A. S. Koenig, Carl Wilson; SEVIER, R. B. Dickinson; UNION, Garland D. Murphy, Jr.; WASHINGTON, Thomas Gray, Wendall Ward; WHITE, William J. Mattox. COUNCILORS Eldon Fairley, Paul Ledbetter, Paul Gray, Hugh Edwards, H. W. Thomas, George Burton, John P. Wood, William Martin Eisele, Jack Kennedy, Stanley Applegate, C. C. Long, L. A. Whittaker. OFFICERS: President C. R. Ellis, Secretary Elvin Shuffield, Treasurer Ben N. Saltzman, First Vice President Guy Farris. PAST PRESIDENTS Charles Henry, R. C. Dickinson, J. J. Monfort, W. R. Brooksher, James M. Kolb, Louis K. Hundley, Will H. Mock.

Speaker Hyatt announced that a quorum was present.

The Speaker called for the report of the Nominating Committee. The committee chairman, Louis K. Hundley, presented the report in three parts. The first part of the report was the nominations for the office of president-elect; the names of C. Lewis Hyatt of Monticello and George Burton of El Dorado were proposed by the committee. Dr. Hundley moved that this section of the committee's report be accepted as read. The House so voted. Inasmuch as the speaker's name was presented as a candidate, he requested that Secretary Shuffield serve as temporary chairman. There were no nominations from the floor for the office of president-elect. George Burton requested that his name be withdrawn. Upon motion of A. S. Koenig, second by Hugh Edwards, Dr. Hyatt was unanimously elected to the office of president-elect.

Chairman Hundley then read the second part of the report of the Nominating Committee; the offices for which only one nominee was proposed by the committee:



Entertainment for the Banquet was furnished by the Berl Olswanger Troupe of Memphis, Tennessee, featuring songs, skits, and dancing numbers, May 5, 1964.

FOR FIRST VICE PRESIDENT:
Thomas E. Burrow, Hot Springs
FOR SECOND VICE PRESIDENT:
Charles A. Taylor, Batesville
FOR TREASURER:
Ben N. Saltzman, Mountain Home
FOR SECRETARY:
H. Elvin Shuffield, Little Rock
FOR SPEAKER OF THE HOUSE OF DELEGATES:
John P. Price, Monticello
FOR VICE SPEAKER OF THE HOUSE OF DELEGATES:
Louis K. Hundley, Pine Bluff
FOR COUNCILORS:
FIRST DISTRICT:
Paul Ledbetter, Jonesboro
SECOND DISTRICT:
Hugh R. Edwards, Searcy
FOURTH DISTRICT:
H. W. Thomas, Dermott
FIFTH DISTRICT:
Perry Dalton, Camden
SIXTH DISTRICT:
John P. Wood, Mena
SEVENTH DISTRICT:
Robert F. McCrary, Hot Springs



The Cocktail Party was held on the delightful Pool Deck of the Arlington Hotel, May 5, 1964.

EIGHTH DISTRICT:
Joseph A. Norton, Little Rock
NINTH DISTRICT:
Ross Fowler, Harrison
TENTH DISTRICT:
L. A. Whittaker, Jr., Fort Smith

FOR ALTERNATE DELEGATE TO THE AMERICAN MEDICAL ASSOCIATION: C. C. Long, Ozark. Chairman Hundley moved that this section of the report be accepted as read. T. D. Brown moved that nominations cease and that nominees be elected by acclamation; upon second by Applegate, nominees were unanimously elected.

Dr. Hundley then presented the final portion of the report of the Nominating Committee, announcing that nominees for two positions who were selected by the committee had not registered at the meeting and were, therefore, ineligible for office. Nominations from the floor were requested for the office of THIRD VICE PRESIDENT. Omer E. Bradsher of Paragould and Karlton Kemp of Texarkana were nominated. Dr. Kemp was declared ineligible inasmuch as he is already serving as councilor. Upon motion of Koenig, second by Kemp, nominations were closed and Dr. Bradsher was unanimously elected by acclamation. Nominations from the floor were then requested for the position of Councilor from the THIRD DISTRICT. L. J. Pat Bell of Helena was nominated. Upon motion of Koenig, second by Brown, nominations were closed and Dr. Bell was unanimously elected by acclamation.

Dr. Hundley then announced that the Nominating Committee was submitting the names of two candidates for the position of Delegate to the American Medical Association. The names of James M. Kolb, Sr. of Clarksville, and Joe Verser of Harrisburg were presented. Hundley moved that this section of the report be accepted as read; motion carried. A. S. Koenig spoke commending Dr. Kolb's accomplishments as AMA delegate and urged that he be re-elected. Included in his remarks were references to actions taken by the Executive Committee of the Society. When Dr. Koenig had concluded, Joe Verser requested the approval of the Executive Committee to reply concerning the actions of that Committee. The members of the Executive Committee granted approval for his request, with Chairman of the Committee H. W. Thomas also requesting that he be allowed to speak on behalf of the Executive Committee. George Burton moved that the House go into Executive Session, and upon second by Koenig, everyone except members of the House and the Society counsel was asked to leave the room.

Following voting on the nominations for the position of AMA delegate, W. R. Brooksher moved that the Executive Session be adjourned; second by Edwards; motion carried.

Paul Ledbetter moved that Dr. Kolb's election to the position of AMA delegate be made unan-

imous. Upon second by Koenig, the House so voted.

Society officers for 1964-65 were declared duly elected and Secretary Elvin Shuffield, acting as temporary chairman of the House, introduced the new president-elect of the Society, C. Lewis Hyatt, for his acceptance of the office. Dr. Hyatt's remarks were as follows:

> With humble appreciation of your confidence in me, apprehension of the task ahead, and an earnest request for your cooperation and assistance, I accept the nomination as your president-elect. I did not covet the office because I have observed the great amount of time, effort, responsibility and wisdom which it requires of one, and criticism to which one is exposed. I will sincerely endeavor to furnish the time and effort to the best of my ability, but I will have to look to Divine Providence and you to provide the wisdom.
>
> It is a strange fact that today when we can do so much more for our patients than ever before, we are under strenuous professional, social, and political pressures. All over the world our profession is being subjected to more and more governmental control and loss of freedom by physician and patient.
>
> In order for medicine to grow and progress—even survive as the profession you and I have known—we must stand together. It is a tragic fact that inter- and intra-professional bickerings have caused splits in our ranks. Members of our profession are pointing accusing fingers at one another in lay publication and public discussions. We must always ask ourselves if our actions are adding to or subtracting from the image of the profession as a whole. Let us express our opinions, discuss fully and decide on our policy and then stand by it.
>
> I will do what I can with Divine Help and your assistance.

Speaker Hyatt noted that it was almost 12:00 noon and inquired as to whether the members of the House wished to recess for lunch or continue until all business was completed. Upon motion of Edwards and Brown, the House voted to continue the meeting until all business was completed.

The Speaker then called for reports from the Reference Committees. Ross Maynard read the report of Reference Committee Number One in the absence of the committee chairman, Dr. Joseph A. Buchman:

REFERENCE COMMITTEE NUMBER ONE

Reference Committee Number One met at 10:00 a.m. on Monday, May 4, in the Arlington Hotel. The reports to be considered as listed by Mr. Schaefer were read and studied.

Those reports approved as read were:

The Committee on Public Health
The Sub-Committee on Rural Health
The Sub-Committee on Mental Health
The Sub-Committee on State Health and Medical Resources for Civil Defense
The Sub-Committee on Postgraduate Education
The Committee on Public Relations
The Advisory Committee to the Arkansas



The Main Dining Room of the Arlington Hotel was crowded with 400 members of the Arkansas Medical Society and their wives and guests for the inauguration of the president and the floor show to follow, May 5, 1964.

State Medical Assistants Society
The Committee on Constitutional Revision
The Seventh Councilor District Professional Relations Committee
The Eighth Councilor District Professional Relations Committee
The Executive Secretary's Report
The Report of the Arkansas State Medical Board

The Supplemental Report of the Committee on Constitutional Revision, as presented by Louis Hundley, chairman, was read and approved and referred back to the Committee on Constitutional Revision.

The Constitutional amendment proposed by the Sebastian County Delegation was read and approved and referred back to the Committee on Constitutional Revision for further action.

The report of the Sub-Committee on Liaison with the State Board of Health was read and studied. It was recommended to explore the advisability and probability of greater use of the Booneville Sanatorium, especially in reference to the treatment of colored persons with tuberculosis, whether to be medical or surgical.

The report of the Sub-Committee on Maternal and Child Welfare was read and studied. It was recommended that the committee work with the State Board of Health on the family planning program.

The report of the Committee on Hospitals was read and approved. It was recommended that this committee investigate and implement the use of the facilities of the smaller hospitals' emergency rooms, in particular with regard to the education and treatment of lay personnel handling and treating the acutely injured individual.

Dr. Maynard moved adoption of the report. Upon second by Edwards, the House voted adoption of the report.

The Chairman of Reference Committee Number Two, submitted the following report:

REFERENCE COMMITTEE NUMBER TWO

Reference Committee Number Two, composed of Guy Shrigley, Ben N. Saltzman, and James Headstream, met at 10:00 a.m. on May 5, 1964, and considered the various reports assigned to it.

Several members of the Arkansas Medical Society were present for the open hearing, and were given the opportunity to speak on each subject as it was considered.

The reports of the following committees were reviewed and approved as submitted:

Committee on Insurance
Committee on Arrangements for Annual Session
Committee on Traffic Safety
Budget Committee
Senior Medical Day Committee
Committee on National Legislation
Professional Relations Committees of the First, Second and Fourth Councilor Districts
Committee on Medicine and Religion
Report of the Council
Advisory Committee on Selective Service
Committee on Medical Legislation

Each member of these committees is to be commended for the efforts put forth and accomplishments achieved in the important work this past year.

The Reference Committee considered the resolution from the Fifty Year Club of the Missouri Medical Society which was presented by J. H. McCurry, Secretary of the Fifty Year Club of American Medicine. The resolution proposed establishment of a home, club, or lodge for incapacitated, debilitated, and retired doctors and their families. The Committee approved the resolution and requests that the House approve the resolution and instruct the elected delegates to the American Medical Association meeting to vote for approval of such action at the national meeting.

Upon motion of Shrigley and Brown, the House adopted the report of Reference Committee Number Two.

Chairman of the Council H. W. Thomas submitted the following report of the Council covering meetings held during the convention:

REPORT OF THE COUNCIL

The Council met on Sunday, May 3rd, and transacted the following business:

1. Upon hearing of the illness of past presidents S. J. Allbright and H. T. Smith and the unfortunate accident of J. P. Price, the Council directed that telegrams be sent to the three members expressing the Society's regrets at their absence.
2. Approved the following applications for affiliate and life memberships:

RETIREMENT

M. C. Crandall — Howards Rands
H. K. Carrington — Paul Jeffery

Byron Bennett	A. F. Barr
Glenn Johnson	W. L. Newton
James M. Nisbett	W. A. Fowler
A. M. Washburn	A. J. Souter
H. A. Murphy	D. A. Dickerson
Joseph Delaney	Howell Brewer
Rex Williams	Arthur Fowler, Jr.
George B. Alcott	James D. Hayes
J. H. Downs	W. M. McRae
W. H. Bruce	Frances Rothert
J. Nye Compton	E. J. Chaffin
Harold N. Miller	H. L. Boyer
Grady W. Reagan	Allan A. Gilbert

DISABILITY

Evelyn Jones	Ralph A. Law
V. L. Payne	B. D. Luck
Bryce Cummins	S. T. W. Cull
C. A. Churchill	Ellery C. Gay, Sr.
William B. Connolly	

MILITARY SERVICE

Victor Ferrari

RESIDENCY TRAINING

E. Barrett Sparks	M. L. Godley
Walter S. Guinee	Rosemary C. Murray
Charles G. Pearce	Sidney W. Arnold
Ralph F. Joseph	F. H. Roy
Harold Hawley	H. K. Baldridge
Thell A. Arrington	R. H. Harrison
W. E. Harville	Henry H. Good
Lee A. Dean	Ellery C. Gay, Jr.
James M. Kolb, Jr.	

LIFE MEMBERSHIP

O. H. Clopton	A. H. Tribble
W. A. Lamb	O. J. T. Johnston
W. K. Smith	E. A. Purdum
M. E. Foster	S. A. Drennen
D. C. Lee	

3. Decided to appoint an Inter-Professional Relations Committee to work with the Pharmaceutical Association. Those appointed to the committee were: Elvin Shuffield, Chairman; Joe Verser, H. W. Thomas, William A. Snodgrass.
4. Accepted and approved the Budget as submitted by the Budget Committee.
5. Approved the purchase of recorders for use in obtaining scientific papers for the Journal.
6. Referred a suggestion that the Society underwrite monthly overhead costs on the Executive Secretary's part-interest in an airplane to the Budget Committee for recommendation.
7. Approved Executive Committee action:
 (a) recommending A. S. Koenig to the Board of Trustees of the American Medical Association for a position on the Committee on Insurance and Pre-Payment Plans of the Council on Medical Service;
 (b) agreeing to support the position of the State Board of Health regarding individual operation of the radiation control program;
 (c) approving Mr. Warren's travel expense to an A.M.A. legal conference.
8. Nominated Charles Reid to succeed himself on the Board of Trustees of Arkansas Blue Cross-Blue Shield.
9. Delegated to the Committee on Liaison with the Nursing Profession an anticipated program of joint exploration of the role and responsibility of the nurse in patient care.
10. Requested the Committee on Constitution and By-Laws to consider the advisability of making the nursing committee a standing committee of the Society.
11. Decided to defer action on a memorial for Dr. J. D. Riley pending the advice of Dr. John Wood, who is a member of the Board of Trustees of the Booneville Sanatorium.
12. Heard a report by the Chairman of the Maternal and Child Welfare Committee, Dr. Thomas E. Townsend, on his study of methods of family planning. The council requested Dr. Townsend to continue to work with the State Health Department and to make recommendations to the Department regarding the developing of a family planning program.
13. Referred to a reference committee a proposal by the secretary of the Fifty Year Club that a national home for incapacitated, debilitated, and retired doctors and their families be established.

The Council met on Monday, May 4th, and transacted the following business:

1. Approved travel to the Western Conference of Foundations for Medical Care for Dr. Ellis and Mr. Schaefer.
2. At the suggestion of the chairman of the Mental Health Committee, Dr. Payton Kolb, the Council referred a South Carolina resolution on mental health to the Committee on Mental Health.
3. Appointed a resolutions committee to draw up resolutions for the Society and to con-

sider two resolutions from Iowa regarding the federal subsidization of voluntary health insurance and indemnity plans for hospital coverage.

4. Heard Dr. Harvie Ellis of the State Health Department explain the Stateline Training Course on Emergency Hospitals and approved his plan of promoting the program.
5. Received nominations by the respective councilors of Dr. Paul Sizemore of the Fifth and Dr. Coy Kaylor of the Ninth Districts for places on the Arkansas State Arbitration Commission.
6. Heard a report by Dr. Louis Hundley of negotiations by himself and Dr. James Kolb with Medicare officials to defeat an effort by the government to reduce anesthesia fees and in-hospital-visit fees under the program. Dr. Hundley also reported that he and Dr. Kolb were successful in raising the fee for well-baby care from $10 to $15 under Medicare.
7. Heard a report by the Medical Education Foundation for Arkansas and commended the Board of Trustees for its work. The Council endorsed the use of funds from the Foundation for matching funds for federal loans.

The Council met on Tuesday, May 5th, and approved the following resolutions:

(1)

WHEREAS, increasing costs of hospital and medical care have necessitated a recent dues increase by the Arkansas Blue Cross-Blue Shield plan, and

WHEREAS, the major increase in costs has been due to Blue Cross claims, and

WHEREAS, the necessary dues increase has approached the point where it is becoming burdensome for older-aged subscribers to maintain Blue Cross-Blue Shield coverage,

NOW, THEREFORE, BE IT RESOLVED that the Arkansas Medical Society request the Board of Trustees of Arkansas Blue Cross-Blue Shield to consider development of a Blue Cross contract with indemnity provisions and limitation of liability, thus providing hospital coverage —although not complete—at a subscription cost which will be attractive to the older-age people in this State.

(2)

WHEREAS, the Arkansas Medical Society has heretofore expressed unalterable opposition to federal control of medicine and medical services, and

WHEREAS, Arkansas Medical Society is of the opinion that federal subsidization leads inevitably to federal control, and

WHEREAS, there can be no compatible companionship between political denomination and private medical care of the patient by free, dedicated physicians,

NOW, THEREFORE, BE IT RESOLVED, that the Arkansas Medical Society reaffirms its declaration of previously-made opposition to federal subsidization of voluntary health insurance programs.

The Council also heard a report by Dr. Louis Whittaker and commended him on his plans for the Arkansas Political Action Committee.

The Council met on Wednesday, May 6th, and transacted the following business:

1. Adopted the following resolution:

RESOLUTION ON TRAFFIC SAFETY

WHEREAS, traffic fatalities are steadily rising each year, and

WHEREAS, the present method of issuance of drivers' licenses is obsolete and inadequate, and

WHEREAS, the lack of any central file for recording traffic violations makes it impossible for law enforcement agencies to detect repeated offenders,

NOW, THEREFORE, BE IT RESOLVED, that the Council of the Arkansas Medical Society, in session on May 6, 1964, does recommend that (1) a central agency be established for the issuance of automobile drivers license; (2) a central registry of traffic violations be maintained, and (3) the Legislative Committee of the Arkansas Medical Society give these recommendations every consideration during the forthcoming session of the Arkansas Legislature.

2. Approved underwriting monthly overhead expense on the Executive Secretary's airplane.

3. Heard a report from the Ark-Pac treasurer on activities of that organization.

Upon the motion of Thomas and Edwards, the House approved the report.

The chairman of the Resolutions Committee, Elvin Shuffield, presented the following resolution:

RESOLUTION OF APPRECIATION

WHEREAS, the Arkansas Medical Society received courteous, careful and fair consideration

from the Press, the Radio and Television, during our sessions, and their cooperation has done much to make our 88th Annual Session a success, and

WHEREAS, the management of the Arlington Hotel has facilitated our efforts in every way, where most of our sessions have been held, and

WHEREAS, the Garland County Society, and the individual members thereof, and particularly the ladies' committees, have been gracious hosts, and have contributed greatly to our enjoyment, and

WHEREAS, the Hot Springs Golf and Country Club has been most generous in making its golf course available for the Golf Tournament, and

WHEREAS, distinguished guests from beyond our borders, who have appeared on our program, have added very greatly to the worth of our meeting, and we have benefited from the lessons which they have shared with us, and

WHEREAS, the hours of thought devoted by the Committee on Arrangements for the Annual Session have been greatly rewarding, and have borne fruit in a program of outstanding worth, and

WHEREAS, study and other effort was given by our technical exhibitors, resulting in exhibits that have been instructive, and they were greatly enjoyed, and

WHEREAS, the commercial exhibitors were of great benefit to our gatherings and the courteous and careful attention of the attendants was quite helpful,

NOW, THEREFORE, BE IT RESOLVED that the Arkansas Medical Society records its sincere appreciation, and expresses its heartfelt thanks to our host city, and those heretofore mentioned, for the cordial welcome, the extension of unbounded hospitality, the expression of good will and kindly feelings shown each member of the Society, who have been privileged to attend this session. We shall ever hold in pleasant memory the hours spent as their guests during the last several days.

Dr. Shuffield moved that the resolution be adopted and that copies of it be forwarded to those involved. Upon second by Brown, the House so voted.

Speaker Hyatt called for a report from the Fifth Congressional District regarding nominees for the position on the Arkansas State Board of Health now filled by C. A. Archer, Jr., of Conway. Inasmuch as there was no report from members of the Fifth District, Hugh Edwards moved that Dr. Archer be nominated for the position. It was pointed out that the Society is required to submit three nominees for each vacancy and John Wood moved that the names of Fred Gordy of Conway and Keller Lieblong of Conway also be submitted for consideration. The House voted to submit the three nominees to the Governor.

Speaker Hyatt called for a report from the First Congressional District regarding a nominee for the position on the Arkansas State Medical Board. Eldon Fairley reported that the members of the district had selected Paul Ledbetter of Jonesboro as the nominee for the position. Hugh Edwards moved that the House approve the nomination and it was so voted.

The Chairman of the Constitutional Revisions Committee, Louis Hundley, presented proposed amendments to the Constitution for final action.

1. Deleting *Article IV, Section 5* of the Constitution. Hundley moved adoption of the amendment, second by Brown. Approved.
2. Amending Article V of the Constitution so as to insert the word "treasurer" after the word "secretary" in line 4 thereof. Hundley moved adoption of the amendment, second by Edwards. Approved.
3. Amending Article VI of the Constitution so as to insert the words "the two delegates to the American Medical Association" after the word "treasurer" in line 2 thereof. Upon the motion of Brooksher and Brown, the House voted to reject the amendment.
4. Amending the By-Laws, Chapter 1, Section 4 to read:
 Section 4. Life Membership.

 An active member who shall have attained his eightieth year and shall have been a member of his county medical society in Arkansas or elsewhere in the United States continuously since beginning the practice of medicine, or who for fifty years shall have been continuously a member of his county medical society in Arkansas or elsewhere in the United States, shall, upon establishing the above facts to the satisfaction of his county medical society, and upon the recommendation of such society, be granted the status of a Life Member. Such member shall enjoy full membership privileges and shall be exempt from the payment of further dues or assessments.

Adding as Section 5:

Section 5. Affiliate Membership.

An active member in good standing in his county society may, upon the recommendation of such society, be granted affiliate membership with full voting and other privileges where one or more of the following conditions exist: retirement from active practice, physical or other disability of a character preventing the practice of medicine, a serious and prolonged illness, or financial reverses. Affiliate membership shall be on an annual basis only and a member must be recommended each year for such special status by the secre-

tary and president of his county medical society following a review and reassessment of his particular situation. An affiliate member shall enjoy full membership privileges and shall be exempt from the payment of dues and assessments during the year in which he is granted such status, and a certificate of membership shall be issued to him for such year.

Adding as Section 6:

Section 6. Affiliate Membership for Interns and Residents

An annual affiliate membership shall be granted interns and residents, provided they are fully or partially excused from the payment of county society dues, and provided the request for exemption is transmitted through a component society of the Arkansas Medical Society. The requirement for active membership prior to exemption shall be waived for such affiliate members. This type of member shall be accorded full privileges except that he may not vote or hold office, and he shall receive the Journal of the Arkansas Medical Society.

Adding as Section 7:

Section 7. Military Members

Regular members of the Arkansas Medical Society who are in the service of the armed forces of the United States, not as career officers, may be classified as military members, and carried on the rolls of their respective county societies as such. Military members shall have a waiver of dues during the time of service, provided that they are in good standing at the time they entered the armed forces. Military members shall enjoy full membership privileges and certificates of membership shall be issued to them for each year.

Dr. Hundley moved adoption of this section of the report. Second by Whittaker. Approved.

5. Amending the By-Laws, Chapter VIII, Section 1 (A) to add the words "Sub-Committee on National Legislation" after the words "Committee on Medical Legislation". Upon motion of Hundley and Koenig, the House approved this amendment.

Dr. Hundley then presented the following proposed amendments for the first reading:

1. Amend the By-Laws, Chapter VIII, Section 1 (A) to add as Committee Number 11 the Committee on Medicine and Religion.
2. Add to Chapter VIII of the By-Laws:

 Section 12. The Committee on Medicine and Religion shall work to create and enhance communication between the physician and the clergyman which will lead to the most effective care and treatment of the patient in which both are interested. It shall study the areas in which there is or may be continuing correlation involving medicine and religion.

This amendment will be published twice during the year in the Journal and read at the 1965 Annual Session for final action.

The following report from Robert H. Atkinson, chairman of the Liaison Committee with Vocational Rehabilitation, was read:

LIAISON COMMITTEE WITH VOCATIONAL REHABILITATION

The Committee on Rehabilitation of the Arkansas Medical Society submits the following current report to the House of Delegates;

Although the most recent center activated, the Hot Springs Rehabilitation Center is recognized as having facilities superior to any in the country. Dr. Gerald Fisher, Administrator, and Dr. Gaston Hebert, Medical Director, have procured an excellent staff and at present are training approximately 300 students.

Recently, Dr. Hebert has initiated a program designed to inform the physicians throughout the State exactly what is being done at the center. Small groups are invited to lunch; the general framework of the training facilities is outlined by Dr. Fisher and the head of each department reports in more detail as to the procedure followed in the selection and training of a student. Following this comprehensive and informative presentation, there is a tour of the center.

This committee is most impressed with the dedication of the advisors and instructors as well as the enthusiasm and determination of the students, and congratulates Mr. Don Russell, State Director, and the entire staff for the work which they are doing.

Each physician in Arkansas is urged to visit the Hot Springs Rehabilitation Center, for it is one State and Federal Project which pays its own way. The training a student receives takes him off the welfare roll, gives him confidence in his abilities for he is prepared to achieve a definite goal —that of being a self-supporting, tax-paying citizen.

Upon motion of Hundley and Edwards, the motion was approved.

Jack Kennedy, speaking on behalf of the Committee on Medicine and Religion, announced the availability of a film on the subject of medicine and religion. Interested parties are to contact Joe Norton, committee chairman, for further information on the film.

Speaker Hyatt requested motion and discussion regarding the meeting place for the 1966 Annual Session. Elvin Shuffield, speaking for the Pulaski County group, invited the Society to meet in Little Rock in 1966. The House unanimously accepted the invitation.

Upon motion of Applegate and Millard, the House adjourned at 12:40 p.m.

REGISTRATION

Physicians	386
Guests	14
Exhibitors	82
	482

OFFICERS OF THE ARKANSAS MEDICAL SOCIETY 1964-1965

President	C. Randolph Ellis, Malvern
President-elect	C. Lewis Hyatt, Monticello
First Vice President	Thomas E. Burrow, 236 Central, Hot Springs
Second Vice President	Charles A. Taylor, Batesville
Third Vice President	Omer Bradsher, Paragould
Secretary	Elvin Shuffield, 1000 Wolfe, Little Rock
Secretary Emeritus	W. R. Brooksher, Box 1299, Station A, Fort Smith
Treasurer	Ben N. Saltzman, Mountain Home
Speaker, House of Delegates	John P. Price, Monticello
Vice Speaker of House	Louis K. Hundley, P. O. Box 1521, Pine Bluff
Journal Editor	Alfred Kahn, Jr., 1300 West Sixth, Little Rock
Delegates to AMA	Jack Kennedy, Arkadelphia; James M. Kolb, Clarksville
Alternate Delegates to AMA	Alfred Kahn, Jr., Little Rock; C. C. Long, Ozark
Executive Secretary	Mr. Paul C. Schaefer, P. O. Box 1345, Fort Smith

EXECUTIVE COMMITTEE OF THE COUNCIL

Chairman of the Council	H. W. Thomas, Dermott, Chairman
President	C. Randolph Ellis, Malvern
President-elect	C. Lewis Hyatt, Monticello
Secretary	Elvin Shuffield, 1000 Wolfe, Little Rock

COUNCILORS

District	Councilor Term Expires '65	Councilor Term Expires '66	Counties in District
1.	Eldon Fairley Osceola	Paul Ledbetter Jonesboro	Clay, Craighead, Crittenden, Fulton, Greene, Lawrence, Mississippi, Poinsett, Randolph, and Sharp
2.	Paul Gray Batesville	Hugh R. Edwards Searcy	Cleburne, Conway, Faulkner, Independence, Izard, Jackson, Stone, and White
3.	Paul Millar Stuttgart	L. J. P. Bell Helena	Arkansas, Cross, Lee, Lonoke, Monroe, Phillips, Prairie, St. Francis, and Woodruff
4.	T. E. Townsend 1310 Cherry Pine Bluff	H. W. Thomas Dermott	Ashley, Chicot, Desha, Drew, Jefferson, and Lincoln
5.	George C. Burton 427 West Oak El Dorado	Perry Dalton 415 Hosp. Drive Camden	Bradley, Calhoun, Cleveland, Columbia, Dallas, Ouachita, and Union
6.	Karlton H. Kemp 408 Hazel Texarkana	John P. Wood Mena	Hempstead, Howard, LaFayette, Little River, Miller, Nevada, Pike, Polk, and Sevier
7.	Jack Kennedy Arkadelphia	Robert F. McCrary 238 Woodbine Hot Springs	Clark, Garland, Grant, Hot Spring, Montgomery, and Saline
8.	Wm. Payton Kolb 1120 Marshall Little Rock	Joseph A. Norton 5108 Centerwood Little Rock	Pulaski
9.	Stanley Applegate Springdale	Ross Fowler Harrison	Baxter, Benton, Boone, Carroll, Marion, Newton, Searcy, Van Buren, and Washington
10.	C. C. Long Ozark	L. A. Whittaker 621 South 21st Fort Smith	Crawford, Franklin, Johnson, Logan, Perry, Pope, Scott, Sebastian, and Yell



GUEST

EDITORIAL

RADIATION SAFETY

George Regnier, M.D.*

Little Rock, Arkansas

In 1895 DR. WILHELM KONRAD ROENTGEN first discovered the invisible light which he termed "X-Rays". Shortly thereafter the naturally occurring radioactive substance-radium-was isolated by the Curies. Both of these discoveries were rapidly applied to the practice of medicine. In the late 1930's a few isotopes were produced by cyclotrons, but not in sufficient quantity to bring them into general use. However, the research did point the way to their medical application. When isotopes came into quantity production from the atomic reactors after the World War II, there was a ready market for their use.

Initially, the damage which ionizing radiations could do to body tissues was not realized. Accordingly, a number of the early workers and their patients suffered severe injury and even death from careless exposure. Gradually, measures were evolved and equipment was improved which greatly diminished the chances of bodily injury to those working with radiations. Thus, bodily injuries have diminished although there has been a tremendous expansion in the use of all types of radiations.

In his classical experiments with fruit flies Dr. H. J. Muller clearly demonstrated that somatic injury was not the only damage which radiations inflict. They also injure chromosomes in the germ cells, with resultant mutations. These mutations are almost always harmful, and may become apparent only in future generations. The quantity of radiation needed to produce genetic change may be very, very small as compared to that necessary to cause somatic damage.

With nuclear bomb explosions, recent years have witnessed increasing amounts of background radiation raining down upon the world's population. This is radiation which we, acting as individual physicians, cannot control. It becomes imperative, then, that we do control radiation exposure wherever possible. We have it within our power to control the exposure obtained in medical examinations. It is our responsibility to limit the use of radiation on our patients to those examinations and treatments that are necessary to diagnosis and cure.

For several years the matter of radiation safety has been a chief activity of the Atomic Energy Commission of the United States. Recently, a number of State Legislatures have passed bills setting up agencies to check on radiation users. After consultation with leaders of the Arkansas Medical Society, such a bill was passed by the Arkansas Legislature in 1961. Responsibility was given to the State Board of Health for enforcement of this legislation. The rules and regulations to carry out this responsibility were drawn up after consultation with a special committee appointed by the Council of the Arkansas Medical Society. However, no funds were given initially. Only in the last year have there been sufficient funds to allow for training of inspecting personnel and to make the law operative.

The first step here in Arkansas will be to "take a census" of all sources of radiation used in our state. Each physician has already received a letter explaining this step. The envelope contained a registration blank, to be properly filled in, listing all sources of radiation in your office.

When these registration blanks have been received, personnel from the State Health Department will, at some later date, come to examine

*Donaghey Bldg., Little Rock, Arkansas

your equipment. Checks will be made of the safety of your equipment. Suggestions will be given you to increase the safety to yourself and to your patient. Adjustments may be suggested in the equipment which will insure the minimal amount of necessary radiation. Such visits and examinations will become a regular feature in the future. This will certainly give us a large measure of protection from radiation exposure and medico-legal liability.

I plead with each of you to take the time now to register your x-ray equipment and any radium or isotope sources that you may have, as required and requested.

It is an opportunity for each of us to demonstrate the highest medical ethics and to give leadership in an important matter of safety to ourselves and to our patients. Certainly, this is governmental action such as we can accept—local governmental action, carrying out a law which was developed in consultation with local medical leaders and approved by our own medical society. This is so much better than federal control, federal administration and federal regulation.

The opportunity and responsibility is ours to demonstrate a high quality of medical statesmanship. Let us act without delay in this matter.

MEDICINE IN THE NEWS

CHANGES IN RELATIVE IMPORTANCE OF SOURCES OF INCOME FOR BASIC OPERATIONS OF PUBLIC AND PRIVATE MEDICAL SCHOOLS 1941 to 1962

While the increasing availability of funds for research and other sponsored purposes has been attracting a great deal of attention, it must not be forgotten that there has been a continuous shifting in the relative importance of the sources of income upon which medical schools must rely to finance their regular operating programs (basic operations). Such changes—less conspicuous and less provocative—are nonetheless real and warrant thoughtful analysis, particularly since it is income for basic operations that gives schools the latitude they need to meet their basic educational responsibilities and to adjust these to their programs in research and patient care.

In the accompanying table the ten categories of income that accrued to the support of basic operations between the years 1941 to 1962 are ranked in the order of changes in their relative importance for 26 private and 16 public schools.

TABLE 1

CHANGES IN RELATIVE IMPORTANCE OF SOURCES OF INCOME FOR BASIC OPERATIONS OF 16 PUBLIC AND 26 PRIVATE MEDICAL SCHOOLS FOR THE YEARS 1940-41, 1947-48, AND 1961-62

SOURCE OF FUNDS (Basic Operations)	(16) PUBLIC SCHOOLS			(26) PRIVATE SCHOOLS		
	40-41	47-48	61-62	40-41	47-48	61-62
1. Tuition and Fees	2	2	3	2	1	1
2. Endowment Income	4	6	9	1	3	3
3. Non-Federal Gifts and Grants for Teaching or Unrestricted Purposes	3	4	6	4	4	5
4. Federal Grants for Undergraduate Teaching	—	5	7	—	9	9
5. State Appropriations	1	1	1	—	—	—
6. Support from General University Funds	—	—	—	3	2	8
7. Overhead on Grants for All Sponsored Programs	—	7	4	—	7	4
8. Payments Made by Hospitals, Clinics, and Miscellaneous Service and Research Units	6	9	2	6	6	2
9. Teaching Expenses Paid From Medical Service Funds	7	3	5	5	5	6
10. Other	5	8	8	7	8	7

Submitted by the Division of Operational Studies, AAMC

The rank order was determined upon the basis of expenditure data that had been reduced to per-school averages. The selection of schools was based upon the availability of comparable information for the selected years. Private schools with state subsidy were excluded.

The significance of the shifts in importance of the various categories of income as between the private and public schools will be better understood in the light of the following comments:

"Tuition and Fees" have fluctuated between first and second place in relative importance over the years as sources of income for private schools. The trend is downward for public schools. These sources of income remain in first place for private schools, but are third in order of importance for public schools.

"Endowment Income," formerly the primary source of funds for private schools, now stands in third place. The downward trend applies to even a greater extent in public schools, dropping from fourth to ninth place.

"Non-Federal Gifts and Grants for Teaching and Unrestricted Purposes" continue to be important sources of support for basic educational programs (see Datagrams for January 1964) but even so have been falling off for both private and public schools so far as their position of relative importance is concerned.

"Federal Grants for Undergraduate Teaching" were nonexistent in the early 1940's. These grants are intended to augment the training programs for medical students in specified areas, e.g., cancer, mental health, and heart disease.

"State Appropriations" are, throughout this trend period, consistently the first bastion of support for public schools.

"Support from General University Funds" for private schools is now in the eighth position of relative importance as a source of income, whereas in the earlier year it ranked third.

"Overhead on Grants for All Sponsored Programs" is increasing in importance as a source of funds. But since the preponderance of sponsored programs is for research and since research grants fall far short of covering the total costs involved, it must be remembered that the additional expenditures thus called for make this advantage more apparent than real as far as the support of the basic educational programs is concerned.

"Payments Made by Hospitals, Clinics, and Miscellaneous Service and Research Units" have moved upward in the rank order of importance—from sixth to second place as sources of income for both private and public schools. While this may be taken as an indication of an increase in income, it is probable that it is also a reflection of more complete and accurate reporting. Further study of this area is anticipated.

"Teaching Expenses Paid from Medical Service Funds" appear to be increasing slowly. With the decreasing number of charity or nonpaying patients, this source of income assumes added importance.

In addition to highlighting trends in the sources of income for the basic support of medical schools, this presentation also implies that improvement in several areas might be possible.

The Month in Washington

Washington, D. C.—The American Medical Association has recommended to Congress that modernization of existing hospital facilities, especially in urban centers, be emphasized in the Hill-Burton hospital construction program.

An AMA spokesman told the House Commerce Committee that a 1956 study indicated that about one-half of the nation's hospitals needed about $1 billion worth of modernization.

The committee was considering a five-year extension of the Hill-Burton program. The AMA supported the legislation but recommended changes in some of its provisions.

The AMA concurred with the provision that would combine the various types of chronic disease hospitals and nursing homes into one category called "long-term care facilities."

The AMA also supported the principle of federal guarantee of mortgages financing the cost of construction or modernization of a private nonprofit hospital or other specified medical facility, or proprietary nursing home.

"The use of the guaranteed mortgage mechanism offers an incentive to local nonprofit organizations to construct and improve needed medical facilities," the AMA said.

The AMA opposed a provision that would transfer to the Department of Health, Education

and Welfare the Federal Housing Administration program of insured loans for construction of proprietary nursing homes.

The AMA also testified that "diagnostic and treatment centers" should be deleted as facilities eligible to participate in the Hill-Burton program.

"There is little evidence of demand for these facilities since their inclusion in 1954," the AMA said. "Moreover, the definition of the term 'diagnostic or treatment center' is vague and confusing."

The AMA urged that the traditional local determination of need and local administration of the Hill-Burton program be continued.

"The success enjoyed by the program testifies to the effectiveness of this approach," the AMA said. "The Association further urges that area-wide planning for hospitals and related health facilities remain on a voluntary basis. . . . It is our belief that the success of each project would be enhanced if the efforts of the local agency and the local medical society could be joined when planning the location or improvement of facilities."

* * * * *

The Administration asked Congress to authorize a five-year, $260 million plan of federal aid designed to increase the number of nurses in the United States.

The plan called for federal grants and loans for construction of nursing schools and training of nurses.

The American Medical Association approved in principle the construction provision but opposed loans and scholarships for nursing students.

Under the Administration plan, a total of $110 million would be spent over a four-year period on grants to construct new schools of nursing and to replace and expand existing schools. Another major feature of the bill encompassing the plan calls for spending $85 million over five years on loans to nursing students. A "forgiveness feature" would apply to 60 per cent of the loan.

To improve nurse training and service, project grants totaling $58.8 million would be allocated over five years to public and non-profit agencies.

Other funds would be spent on planning grants to help states develop nursing programs and a limited undergraduate scholarship program.

Boisfeuillet Jones, Special Assistant to the Secretary of Health, Education and Welfare, told a House Commerce Subcommittee that it was the hope of the Administration that through passage of the bill the total number of nurses in the country — presently estimated at 550,000 — would increase to 680,000 by 1970.

* * * * *

The National Cancer Institute has sent Congress an encouraging report on its battle against leukemia. It asked for funds for "an all-out effort toward the goal of a cure."

In testimony made public by a House Appropriations Subcommittee, Institute Director Kenneth M. Endicott said there had been a great increase in the number of children in which it was possible to arrest the disease, at least temporarily.

He told the Subcommittee that improved treatments had increased the remission rate for children with acute leukemia to about 90 per cent and had "dramatically increased the periods of their remissions and consequently their life expectancy.

Dr. Endicott said the Institute, an arm of the Government's National Institutes of Health, had more than 60 children in its study groups who had survived more than five years after being treated with drugs.

"Nine children out of ten who come into the Institute hospital, who are usually desperately ill, go into remission, and to all intents and purposes, regain their health, go back home, go back to school and so on, at least for a time," he said.

Subcommittee members also asked Endicott about possible cancer-causing elements in such food as charcoal broiled steaks and potatoes cooked in ashes.

He said several laboratories had found cancer-causing agents when fats were heated to high temperatures and incompletely burned. Asked if people should stop eating such food, he said "some might draw that conclusion. I am not prepared to go that far yet."

Food and Drug Commissioner George P. Larrick hailed a federal court decision against promotional claims for vitamins and other food supplements as a landmark in the history of efforts against nutritional misinformation.

The Federal District Court ruled false many widely used promotional claims for vitamins and other food supplements after a lengthy hearing on the seizure of a quantity of vitamin and mineral capsules distributed by the Vitasafe Corporation, Division of Consolidated Sun Ray, Inc., at Middlesex, N. J., in October, 1960. The seized products were labeled in part "Vitasafe Formula

M," "Vitasafe Formula W," "Vitasafe CF," and "Vitasafe Queen Formula with Royal Jelly Supplement for Women."

Judge Arthur J. Lane, in his opinion, noted that labeling of the seized products represented that Vitasafe capsules were adequate and effective for the treatment or prevention of some 38 conditions, including "depression, tension, weakness, nervous disorders, lethargy, lack of energy, lassitude, impotence, aches and pains, aging, impaired digestion, loss of appetite, lesions and scaliness, night blindness, photophobia, fatigue and headaches."

"This representation is false and misleading," Lane said. "The evidence produced at trial conclusively proves that the above designated symptoms or conditions are caused by and associated with a great number of serious pathological diseases. Further, although some of these symptoms may be associated with vitamin and mineral deficiencies, the likelihood of their being caused by or associated with vitamin or mineral deficiencies in the U. S. today is very small.



The Section of Ophthalmology of the Southern Medical Association announces that papers for consideration for presentation at the Memphis meeting, November 16-19, 1964 will be accepted only up to May 15, 1964.

The meeting this year under the chairmanship of Dr. Albert C. Esposito of Huntington, West Virginia, will begin on Monday, November 16th, designated "Memphis Day" with live television surgery and then scientific papers in the afternoon. Dr. Philip M. Lewis of Memphis, chairman-elect of the Section will coordinate the "Memphis Day" meeting.

Tuesday and Wednesday will be devoted to additional scientific papers with a Business Session at the conclusion of the scientific papers.

Meetings to Come

The Annual Meeting of the American Association of Electromyography and Electrodiagnosis will be held on Sunday, August 23, 1964, at the Statler-Hilton Hotel, Boston, Massachusetts. Please address all communications to: Max K. Newman, M. D., 16861 Wyoming Avenue, Detroit, Michigan 48221.

The Hawaii Medical Association will again sponsor a seminar immediately following the 1964 AMA convention in San Francisco. An excellent program with prominent speakers both from the mainland and from the Hawaii Association has been arranged. A brochure describing the transportation and hotel arrangements, as well as the preliminary program, may be obtained from the following: Hawaii Medical Seminar, Suite 300, 1612 "K" Street, Washington, D. C. 20006.

Announcements and Things to Come

Section on Gastroenterology Scheduled

The Section on Gastroenterology of the Southern Medical Association has been scheduled for Monday and Tuesday, November 16th and 17th, 1964, in Memphis, Tennessee. Dr. Frank Gardner will be the guest speaker.

Rocky Mountain Cancer Conference

Program plans for the 18th Annual Rocky Mountain Cancer Conference in Denver, July 10-11, have been finalized and will include participation by the presidents of the American Medical Association and of the American Cancer Society. This two-day conference will be held in the Brown Palace Hotel. Further information on the conference may be obtained by writing: Rocky Mountain Cancer Conference, 1809 East 18th Avenue, Denver, Colorado, 80218.



Dr. John Henry Kilgore

Dr. John Henry Kilgore, 36, of Pine Bluff, was killed April 6, 1964, in an automobile accident near Wrightsville. Dr. Kilgore was a native of

Fordyce and was graduated from the University of Arkansas School of Medicine. He interned at St. Vincent Infirmary in Little Rock. Dr. Kilgore was a veteran of World War II. He owned nursing homes at Pine Bluff, Fordyce, Camden, Osceola and Blytheville. Prior to beginning the practice of medicine in Pine Bluff in 1962, he had practiced at Caraway. Dr. Kilgore was a member of the Craighead-Poinsett County Medical Society, the Arkansas Medical Society, Arkansas Nursing Home Association, American Nursing Home Association, American Medical Association, and other medical groups. He is survived by his wife, three sons, and four daughters.

Dr. John Sullivan Hendricks

Dr. Hendricks, a retired physician, died February 7th at a Little Rock Hospital following a long illness. Dr. Hendricks was a native of Statesboro, Georgia. He was born October 9, 1876. He retired from active practice in 1956 after 54 years in Sevier County. He was a graduate of Louisville Medical College. Dr. Hendricks is survived by his wife and six sons.



PERSONAL AND NEWS ITEMS

Gould Clinic Gets Full-Time Physician

Dr. C. H. Dickerson, Jr., opened his office for the practice of medicine and surgery at the Gould Medical Clinic in March. He is a native of Conway, and a graduate of the University of Arkansas School of Medicine. For the past year, Dr. Dickerson has been in practice in Caraway.

Doctor Joins Staff of Dumas Clinic

Dr. O. C. Blackwell joined Dr. Wayne Lazenby in the practice of medicine at the Lazenby-Blackwell Clinic of Dumas in March. Dr. Blackwell is a graduate of the University of Arkansas School of Medicine. He had been at the Gould Clinic for the last year. Dr. Blackwell previously practiced in Dumas.

Doctor Becomes Candidate for Coroner

Dr. Bill Snow of Mountain Home has filed as a candidate for Baxter County Coroner. Dr. Snow is a native of Mountain Home and a graduate of the University of Arkansas School of Medicine. He is affiliated with the Cheney-Snow Clinic in Mountain Home in the practice of medicine.

Dr. Wheat Speaks at Lonoke Church

Dr. Ed Wheat, a native of Lonoke who is now in the general practice of medicine in Springdale, returned to his hometown in March to fill the pulpit at the Lonoke Presbyterian Church. Dr. Wheat has been active as a layman in the Methodist Church at Springdale and has been filling speaking engagements in many churches throughout the State. His subject for the service in Lonoke was "The Holy Spirit Within Us Today".

Dr. Cazort Elected to Academy Office

Dr. Alan G. Cazort of Little Rock was elected vice president of the 1300-member American Academy of Allergy at its 20th Annual Meeting in San Francisco in February.

Legal Secretaries Hear Dr. Wade

Dr. H. King Wade, Jr., of Hot Springs, a past president of the Arkansas Medical Society, discussed the King-Anderson Bill at a meeting of the Garland County Legal Secretaries' Association in February.

Dr. Rogers Addresses B. & P. W.

Dr. Paul Rogers of Fort Smith discussed 'personal development' at a meeting of that city's Business and Professional Women's group in March.

Dr. Robins Speaker at Nebraska State Meeting

Dr. R. B. Robins of Camden, Arkansas, appeared on the program of the Annual Session of the Nebraska State Medical Association in April. He discussed "Health is a Bargain" and "The Expanding Population".

Dr. Harris attends Conference

Dr. Lowell Harris, Chairman of the Medical Advisory Committee for the Hempstead County Chapter of the National Foundation, went to Dallas in March for a two-day conference of physicians and other volunteers associated with the Foundation.

Dr. Henry is Speaker

Dr. Arnold Henry of Russellville was the speaker at the second session of a "Babysitters Training Course" sponsored by Russellville Jaycettes.

Dr. Kimball Joins Hospital Staff

Dr. Gilbert L. Kimball has joined the staff at the County Hospital in Murfreesboro as surgeon. Dr. Kimball had practiced for many years at De-Queen and is semi-retired but will do such surgery as needed in the Pike County Hospital. He and his wife live at Daisy.

UCPA Honors Physician

Dr. William K. Jordan of Little Rock, was honored by United Cerebral Palsy of Arkansas at a luncheon in Little Rock in March. Dr. Jordan is a long-time member of the medical professional advisory board of UCP and has spent many years of research in the field.

Doctor Returns to Phillips County

Dr. W. K. Hill has returned to Helena to resume the practice of medicine after an absence of six years. He will be associated with the McCarty, Paine, Faulkner Clinic.

Doctors Building New Clinic

Dr. G. A. Sexton and Dr. J. Neal Laney of Forrest City have announced plans for building a new clinic in the rapidly growing 'medical center' near Forrest Memorial Hospital.

Dr. Dennis Speaks in California

Dr. James L. Dennis, of Little Rock, made an address at a meeting of the California Medical Association in March. Dr. Dennis is on the staff of the Cystic Fibrosis Center in Little Rock, which is one of three centers in Region II of the National Cystic Fibrosis Research Foundation and is rated one of the finest.

Dr. Robins Speaks in Stephens

Dr. R. B. Robins, of Camden, Arkansas, was guest speaker at the Stephens High School in March, under the sponsorship of the Stephens Culture Club. Dr. Robins discussed "The Outlook of Mankind".

Doctor Addresses PTA

Dr. R. Fred Broach, director of the Pulaski County Guidance Center, was guest speaker at a March meeting of the Mental Health Chairmen of the Little Rock PTA Council.

RESOLUTIONS



RESOLUTION OF APPRECIATION AND RESPECT
OF THE
BOARD OF TRUSTEES
OF THE
ARKANSAS TUBERCULOSIS SANATORIUM
IN MEMORY OF
DR. ROBERT MANLEY EUBANKS

WHEREAS, Since the Board of Trustees of the Arkansas Tuberculosis Sanatorium last convened, God, in His infinite wisdom, has called from among our number Dr. Robert Manley Eubanks of Little Rock, and

WHEREAS, This faithful and beloved member gave his support and loyalty to the State of Arkansas for all of his life and his untiring devotion and care to the tuberculous sick of the State for the past twenty-three years; and

WHEREAS, There is grief in the hearts of those of us who felt the impact of his personal kindness and benevolence as well as his unfaltering profes-

sional service to the many people beyond the scope of those whom he actually knew and served through the qualities and virtues implicit in the title Doctor and Gentleman; and

WHEREAS, it is our earnest desire to express at this time our loss of and indebtedness to Dr. Eubanks, whose life was consecrated to the movements intended to improve the welfare of our people and to make this a better world; and

WHEREAS, It is with a sense of the immeasurable void created by his passing and of the great service he has rendered the Medical Profession and this Organization that we express in this way the affection and esteem we held for him.

THEREFORE, BE IT RESOLVED That we, the Board of Trustees of the Arkansas Tuberculosis Sanatorium, in regular session at the Sanatorium on the twenty-ninth day of March nineteen hundred and sixty-four, do adopt this Resolution of Appreciation and Respect; and

BE IT FURTHER RESOLVED, That a copy of this Resolution be sent to the members of his bereaved family, a copy be furnished the Arkansas Medical Society, and that a copy be filed with the minutes of this meeting.

Board of Trustees
of the
Arkansas Tuberculosis Sanatorium
R. E. Crigler, M.D., *Chairman*
J. H. Myers, *Vice-Chairman*
Thomas Hall
John P. Wood, M. D.
Eddie Anderson
Earl W. Causey

Resolution of Appreciation and Respect
of the
Board of Trustees
of the
Arkansas Tuberculosis Sanatorium
in memory of
DR. JESSE DEAN RILEY

WHEREAS, At the Divine reckoning since last we met, our beloved friend, leader and companion, Dr. Jesse Dean Riley, has been called to rest; and

WHEREAS, He played so eminent a role in the affairs of this institution for the past thirty-four years, twenty-five of which he was its leader and guide, and in the welfare of the people of the community, the State, and the Nation; and

WHEREAS, His life was consecrated to the purposes for which this institution was founded and gave without stint of his effort, interest and professional service, many times beyond the call of duty, to their execution that our people suffering from tuberculosis might have relief and healing; and

WHEREAS, Dr. Riley by his undeviating loyalty and his love for his fellowman, and particularly to those who came under his care, endeared himself to all, regardless to rank or station; and

WHEREAS, His philosophy of life was admirable, an unique asset to his personal character and to his profession, a philosophy which enabled him to move forward with undiminished fortitude and courage in the face of known adversity that would have halted a less resolute and dedicated man.

THEREFORE BE IT RESOLVED That we, the Board of Trustees of the Arkansas Tuberculosis Sanatorium, in regular session at the Sanatorium on the twenty-ninth day of March nineteen hundred and sixty-four, do adopt this Resolution of Appreciation and Respect; and

BE IT FURTHER RESOLVED, That a copy of this resolution be sent to Mrs. Riley, a copy be furnished to the Arkansas Tuberculosis Association, the Arkansas Medical Society, and that an additional copy be filed with the minutes of this meeting.

Board of Trustees
of the
Arkansas Tuberculosis Sanatorium
R. E. Crigler, M. D., *Chairman*
J. H. Myers, *Vice-Chairman*
Thomas Hall
John P. Wood, M. D.
Eddie Anderson
Earl W. Causey



PROCEEDINGS OF SOCIETIES

Bowie-Miller County

Dr. William L. Kraus, director of cardiopulmonary and electrocardiographic services at St. Paul Hospital in Dallas was in Texarkana in February and made numerous appearances, including one as guest speaker at the monthly meeting of the county medical society.

Independence County

Dr. Phil Cheatham was guest speaker at the February meeting of the Independence County Medical Society. He presented a radiologic program of medical and surgical nature. The program also included the presentation of an interesting case history by Dr. Jim Lytle.

Arkansas County

The Arkansas County Medical Society recently gave a new combination stretcher-examining table to the DeWitt City Hospital.

Pulaski County

The Pulaski County Medical Society invited high school debate students to their March meeting to discuss the Medicare problem, the subject selected nationally for debate clinics during this school year.

Ouachita County

The Ouachita County Medical Society met in regular monthly dinner session at the Camden Hotel in Camden Tuesday night, April 14.

Dr. George L. Ackerman, Assistant Professor of Medicine, University of Arkansas School of Medicine, spoke on the "Management of Chronic Renal Failure."

Bowie-Miller County

The Bowie-Miller Counties Medical Society held a spring seminar at the Holiday Inn in Texarkana on March 21st. Topic for the seminar was "Diabetes". Dr. Theodore C. Panos, Professor and Chairman of the Department of Pediatrics of the University of Arkansas School of Medicine, was one of the speakers. Drs. J. B. Rochelle and John Calhoun were co-chairmen for the event.

Pulaski County

The Pulaski County Medical Society sponsored a "Health Careers Night" on March 19th at the University Medical Center. In connection with the Careers Night, one of the local newspapers ran a series of articles about health careers.

Garland County

Three Garland County physicians with the longest tenures of practice were given special honors at a Doctors' Day Banquet held in Hot Springs in March. The awards went to Dr. A. H. Tribble, 87, the oldest living physician in Garland County; Dr. E. A. Purdum, 78, the oldest physician in active practice in the county; and Dr. D. C. Lee for 50 years of service in the field of medicine. The three was given the "Red Carnation" award, the traditional award to physicians for meritorious service.

Pulaski County

The physicians of North Little Rock celebrated Doctor's Day in March with a dinner-dance at the North Hills Country Club.

Southeast Arkansas

Doctor's Day was observed at the March 17th meeting of the Southeast Arkansas Medical Society in Dermott. Following the Doctor's Day program, the members of the Medical Society heard a talk by Dr. Richard Flowers of Pine Bluff, a dermatologist.

Franklin County

Dr. W. H. Gibbons, who at 89 is in his 63rd year

of practicing medicine, was honored at a dinner in observance of Doctor's Day on March 16th in Ozark. The dinner was sponsored by the Medical Society Auxiliary and was attended by doctors and ministers and their wives. The program included a showing of the film "The One Who Heals". Dr. Gibbons has been a member of the Franklin County Medical Society and the Arkansas Medical Society continuously since 1902. He received the 50 Year Club pin from the Arkansas Medical Society in 1952. He is a life member of the county, State, and AMA.



NEW MEMBERS

DR. W. ROGER VAUGHTER is a new member of the Pulaski County Medical Society. Born at Conway, Arkansas, he received a B.A. degree from Hendrix College before entering the University of Arkansas Medical School. In 1960, he received his M.D. degree from the University. His internship was served at St. Vincent Infirmary. Dr. Vaughter's office address is 4301 West Markham in Little Rock. His specialty is anesthesiology.

A new member of Pulaski County Medical Society is DR. JOHN L. WEARE. He is a native of Brinkley, Arkansas. After completing pre-med at Hendrix College, he enrolled at the University of Arkansas School of Medicine. He received his M.D. degree from that institution in 1958. He completed his internship at the University of Arkansas Medical Center. Dr. Weare is an anesthesiologist and his office address is Tower Building in Little Rock, Arkansas.

Jefferson County Medical Society announces that DR. RICHARD H. FLOWERS has been added to its roster of members. A native of Kilmichael, Mississippi, he received his pre-med from Millsaps College at Jackson, Mississippi. In 1956, he was graduated from Tulane University School of Medicine and he completed his internship at Baptist Memorial Hospital in Memphis, Tennessee, in 1957. He served in the U. S. Air Force from 1957 until 1960. Dr. Flowers' specialty is dermatology and his office is located at 2510 Cherry Street in Pine Bluff, Arkansas.

A new member of Sebastian County Medical Society is DR. HUGH LEWING. He is a native of Mansfield, Louisiana, and he attended college at Louisiana State University and Centenary College of Louisiana. He was graduated from Louisiana State University School of Medicine in 1959. Dr. Lewing's office is located at 404 South 16th Street in Fort Smith. His specialty is internal medicine.

DR. RALPH C. WILSON is a new member of Sebastian County Medical Society. He is a native of Nashville, Arkansas, and attended high school in that city. He then attended Tulane University in New Orleans, Louisiana, and was graduated from Tulane University School of Medicine in 1954. Dr. Wilson practiced in Denver, Colorado, from 1954 until 1958, and in Baton Rouge, Louisiana, from 1958 until 1963. He is a radiologist and his office is located at 318 North Greenwood in Fort Smith.

Sebastian County Medical Society announces that DR. J. V. LeBLANC is a new member. He was born at Memphis, Tennessee, and he attended high school at Greenwood, Mississippi. After completing pre-med at the University of Mississippi, he enrolled at Washington University at St. Louis, Missouri, and received his M.D. degree from that institution in 1956. He served with the U. S. Navy from 1956 until 1963. Dr. LeBlanc is with the Cooper Clinic in Fort Smith. His specialty is internal medicine.

Jefferson County Medical Society announces that DR. ALFRED D. TISDALE, JR., has been added to its roster of members. He is a native of Monroe, Louisiana, and he received a B.S. degree from Tulane University. His M.D. degree was received from Tulane University School of Medicine in 1958. He served his internship at Confederate Memorial Medical Center in Shreveport, Louisiana. Dr. Tisdale's specialty is pathology and his office is located at 1515 West 42nd Street in Pine Bluff, Arkansas.

DR. ANNETTE V. LANDRUM is a new mem-

ber of Sebastian County Medical Society. She is a native of Jasper, Alabama, and received her preliminary education from Southwestern and Memphis State College located at Memphis. She was graduated from the University of Tenn. College of Medicine in 1956. Dr. Landrum's office is located at 922 Lexington in Fort Smith. She is a pathologist.

Garland County Medical Society announces that DR. GEORGE P. QUEEN is a new member of their society. He is a native of Port Arthur, Texas, and he attended high school at Hot Springs. He then attended the University of Arkansas and was graduated from the University of Arkansas School of Medicine in 1962. Dr. Queen is a general practitioner with his office at 604 Medical Arts Building in Hot Springs, Arkansas.

DR. HAROLD A. McCORMACK is a new member of Ashley County Medical Society. He was born at Nashville, Tennessee, and received his pre-medical education from Memphis State University. He then enrolled at the University of Tennessee and received his M.D. degree from there in 1962. He served his internship at John Gaston Hospital in Memphis, Tenn. Dr. McCormack's office is at the Wilmot Medical Center in Wilmot, Arkansas. He is a general practitioner.

A new member of Sebastian County Medical Society is DR. KEMAL E. KUTAIT. Born at Eureka Springs, Arkansas, he attended high school at Fort Smith. His preliminary education was received from the College of the Ozarks and from Tulsa University. He enrolled in the University of Arkansas Medical School and received his M.D. from that institution in 1958. He served in the U. S. Army from 1958 until 1962. Dr. Kutait is a general practitioner with his office at 1610 South "B" Street in Fort Smith.

Sebastian County Medical Society announces that DR. KEITH KLOPFENSTEIN is a new member. He is a native of Clinton, Oklahoma, and attended high school at Arapaho, Oklahoma. He received a B.S. degree from Oklahoma State University. He then enrolled at the University of Oklahoma School of Medicine and received his M.D. degree from there in 1956. Dr. Klopfenstein's specialty is internal medicine and his office is located at 1500 Dodson in Fort Smith.

Sebastian County Medical Society announces that DR. WILLIAM P. PHILLIPS is a new member. He was born at Ashdown, Arkansas, and attended high school in that city. After completing pre-med at the University of Arkansas, he enrolled at the University of Arkansas School of Medicine from which he received his M.D. degree in 1957. He served in the U. S. Army from 1958 until 1960, and he completed a residency in obstetrics and gynecology at the University of Kansas Medical Center in 1963. Dr. Phillips is associated with Drs. Kelsey and Sherman for the practice of Obstetrics and Gynecology. Their office address is 500 Lexington, Fort Smith, Arkansas.

DR. T. A. FIELD, III, is a new member of Sebastian County Medical Society. He is a native of Petersburg, Virginia, and he received a B.A. degree from the University of Virginia in 1955. He then enrolled at Johns Hopkins in Baltimore, Maryland, and received his M.D. degree from there in 1960. He served with the U. S. Army for two years. Dr. Field is a general practitioner and his office is at 3911 North "O" Street in Fort Smith.

A new member of Sebastian County Medical Society is DR. AUGUSTUS M. DAVISON. He was born at Gage, Oklahoma, and he received his preliminary education from Oklahoma State University from which he received a B.S. degree. He was graduated from the University of Arkansas School of Medicine in 1938. Dr. Davison is Director of Public Health for Fort Smith, and his office is at 708 Lexington Avenue, Fort Smith.

Pulaski County Medical Society announces that DR. JAMES A. PITCOCK is a new member. A native of Little Rock, he received his pre-medical education from Massachusetts Institute of Technology from which he received a B.S. degree. He then enrolled at Washington University Medical School in St. Louis and received his M.D. degree in 1955. He completed his internship at Vanderbilt University Hospital. Dr. Pitcock's specialty is pathology. His office address is 926 Donaghey Building, Little Rock.



BOOK REVIEWS

FUNDAMENTALS OF BLOOD COAGULATION IN CLINICAL MEDICINE, by Cecil Hougie, M.D., Associate Professor in Pathology University of Washington, Hematology Director, Clinical Laboratories, University Hospital, Seattle, Washington. pp. 303, published by The Blakiston Division of McGraw-Hill Book Company, Inc., New York, Toronto, London, 1963.

This text, as the author states, is not intended for the hematologists or research workers in the field of hematology. It is written for the general physician and, as such, seems admirably suited. The general introduction to the book discusses the classic descriptions of blood clotting and also includes discussions of the more newly discovered clotting factors, including factors V, VII, VIII, IX, X, XI and XII. The second chapter consists of a further discussion of blood coagulation and the tests of clotting function. There is a very simple summary at the end of this chapter pertaining to interpretation of the tests of clotting function. Most of the remainder of the book discusses specific clotting disorders. There is an interesting very brief chapter on hypercoagulability. The reviewer would like to see this expanded. This book is well written and is heartily recommended as a textbook of blood coagulation for the general physician.

DISEASES OF THE SKIN, Fifth Edition, illustrated, by George Clinton Andrews, M.D., F.A.C.P., Clinical Professor of Dermatology (retired), College of Physicians and Surgeons, Columbia University; Consulting Dermatologist to the Presbyterian Hospital, Columbia-Presbyterian Medical Center, New York City, and Anthony N. Domonkos, M.D., F.A.C.P., Associate Clinical Professor of Dermatology, College of Physicians and Surgeons, Columbia University; Attending Dermatologist to the Presbyterian Hospital, Columbia-Presbyterian Medical Center, New York City, pp. 749, published by W. B. Saunders Company, Philadelphia and London, 1963.

This text is exceptionally well organized and illustrated. The descriptions of disease are necessarily short. Selected references are included in most chapters. The book is particularly well indexed. Perhaps the one weakness of this text, if it has one, is the failure to correlate the dermatologic manifestations of disease with internal disease. There are numerous pathologic slides in the book which show the microscopic manifestations of skin diseases. The physiology of the skin is somewhat slighted. All in all, this is an outstanding text of diseases of the skin and is recommended as a good textbook of dermatology.

RESISTANCE OF BACTERIA TO THE PENICILLINS, Edited by A. V. S. de Reuck, M. SC., D.I.C., A.R.C.S. and Margaret P. Cameron, M. A., illustrated, pp. 125, published by Little Brown and Company, Boston, Massachusetts.

This is a Ciba Foundation Symposium. Considering the importance of antibiotics in the practice of medicine, this book should prove a very wide general interest. The book contains a discussion of Penicillin-resistant staphylococci. There is a section on the Mode of action of the penicillins. Penicillin A's is discussed. There is some general discussion concerning Penicillin and the different types of resistance. Perhaps the most valuable part of this book is that it gives some insight to the general physician in the type of studies that are being performed in investigating the effectiveness of antibiotic drugs. Penicillin studies are not exactly a model for other types of antibiotics and yet they demonstrate the advances made in our understanding of why Penicillin is effective in some cases and ineffective in others—and there is some analogy in these studies to other antibiotics. This book is heartily recommended to all physicians.

W. B. Saunders Company features the following new books in their full page advertisement appearing elsewhere in this issue:

CHILD—THE LIVER AND PORTAL HYPERTENSION. New! — The first of a series of monographs on selected major problems in clinical surgery. Covers all aspects of the subject.

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1963-1964 MAYO CLINIC VOLUMES — New! — The convenient way to keep up with newest developments from the Mayo Clinic. Both medicine and surgery are covered.

THE ENVIRONMENT OF MEDICAL PRACTICE. Edited by R. B. Robins, M.D. pp. 357. Price $6.50. Chicago: The Year Book Medical Publishers, 1963.

The concept of this book is a consideration of the social, economic and civic relationships of the medical profession. Twelve capable essayists develop these themes in comprehensive, concise and informative discussions. For the neophyte intern, resident and practitioner, they provide a background of medical practice customs, usages and relations which have not otherwise been made available for his perusal and understanding. For the more experienced physician, these chapters are a stimulating refresher course. As one of the latter, we can not agree that the assignment of two paragraphs to the county medical society, none to the state medical society, and 25 pages to national and world medical associations, constitutes a proper recognition of the scope, value and potentialities of these basic medical organizations.

THE FUNCTIONAL PATHOLOGY OF DISEASE, The Physiologic Basis of Clinical Medicine, Second Edition, Edited by Arthur Grollman, M.D., Ph.D., F.A.C.P., Professor and Chairman of the Department of Experimental Medicine, University of Texas Southwestern Medical School, Dallas, pp. 979, published by The Blakiston Division of McGraw-Hill Book Company, Inc., New York, Toronto, and London, 1963.

This textbook does not clearly fall into the category of a text of physiology, a text of biochemistry, or a text of medicine; perhaps its principal strength is that it tries to correlate normal and abnormal physiology. In this respect it has done remarkably well. Different sections are written by outstanding authorities in the various branches of medicine. Of particular interest in a text of this sort is a section of infection and immunity; this is not ordinarily seen in a text of this sort. After reviewing this book, the reviewer would prefer the title *The Physiologic Basis of Clinical Medicine* rather than *The Functional Pathology of Disease.* This book is strongly recommended to medical students and internists. It is of some interest to the general surgeon and general physician to a much lesser degree.

TUBERCULOSIS  ABSTRACTS

Sponsored by Arkansas Tuberculosis Association

RESPIRATORY SYMPTOMS, LUNG FUNCTION, AND SMOKING HABITS IN AN ADULT POPULATION

In a community-wide study undertaken in Tecumseh, Mich., an association has been demonstrated between cigarette smoking and the common symptoms of respiratory disease.

In recent years there has been much interest in chronic nonspecific respiratory disease and, particularly, in the use of epidemiological methods to identify factors of importance in the development and progress of chronic bronchitis, emphysema, and related disorders.

In an attempt to identify factors relevant to the maintenance of health and resistance to disease, Tecumseh, Mich., was selected as the site of a comprehensive, prospective epidemiological investigation of the entire community. Observations will be made over a period of years.

Tecumseh is a town of about 6,500 people. Included in the study also are some 3,000 people in the surrounding rural area. Data here reported were collected during a period beginning in March, 1959, and completed 18 months later.

SMOKING HABITS

Questions asked adults related to cough, production of phlegm, incidence of chest illness, and shortness of breath. A simple test of ventilatory function was included in the clinic procedures, a Collins timed vitalometer being used to record vital capacity and forced expiration volume —(F.E.V.$_1$).

Information was sought about past and present smoking habits in adults. Cigarette smokers were subdivided into three groups — those using less than a pack, a pack, and more than a pack a day. The distribution into light, moderate, and heavy categories was about equal in the 1,400 men, but very few of the 888 women said they smoked more than 20 cigarettes daily and light smokers were about twice as common as moderate ones. Present age was not related to daily consumption of cigarettes except at both extremes of the range where the proportion of light smokers was largest. Of the men, 260 smoked pipes and cigars only.

Smokers were also divided into three groups according to the length of time they had been smoking, the divisions being at 10 and 20 years. Duration of smoking was highly correlated with present age and attempts at assessing its effect on the development of symptoms have been limited by this fact. The finding is in keeping with other reports that the majority of smokers acquire the habit early in adult life. In all, 59 per cent of men and 34 per cent of women smoked cigarettes.

Fifteen per cent of the men aged 16 or more had never smoked, the percentage being highest in the very young and very old. Of the women, 55 per cent were nonsmokers, the percentage of nonsmokers being much higher above 50 years of age than younger.

In men the proportion of ex-smokers increased with age, but in women it was slightly lower in the oldest age groups.

As for symptoms, persons who had both cough and phlegm, and one or both of these symptoms all day for at least three months each year, were designated as having Grade II symptoms; those with cough and phlegm to a lesser degree were designated Grade I.

The prevalence of Grade II symptoms in men who smoked cigarettes was six times that in nonsmoking men; the prevalence of Grade I symptoms was only twice as large. Among women,

Millicent Payne, M.D., D.P.H., and Marcus Kjelsberg, Ph.D. *American Journal of Public Health,* February, 1964.



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cigarette smokers had three times as much Grade II cough and phlegm and twice as much Grade I as nonsmokers.

Neither ex-smokers nor pipe and cigar smokers differed appreciably from the nonsmokers except in the oldest age group where the proportion with grade II symptoms was less in nonsmokers. In the nonsmokers there was no appreciable difference between men and women in the prevalence of cough and phlegm.

The prevalence of symptoms increased with age in men who smoked cigarettes, being more marked for Grade II cough and phlegm than for Grade I. If this were an effect of age or of some experience associated with aging, a similar trend should be noted in nonsmokers. However, no trend of this type was seen in relation to Grade II symptoms among nonsmokers.

SHORTNESS OF BREATH

In regard to shortness of breath, men cigarette smokers and ex-smokers were affected about equally and more often at all ages than nonsmokers. This suggests that smoking for prolonged periods of time may be related to the development of shortness of breath and that this is added to the effect of aging itself or of experiences associated with aging. Among the women, exsmokers most commonly reported shortness of breath. Cigarette smokers had more shortness of breath than the nonsmokers below the age of 40 and less above this age.

In general, the percentage affected was largest in those smoking the most cigarettes and least in those smoking the fewest.

A comparison of the prevalence of shortness of breath by smoking class has been made in persons who did not have cough or phlegm. Exsmokers of both sexes reported more shortness of breath than did any of the others, and among the older men cigarette smokers were more often affected than nonsmokers. Comparing cigarette smokers without cough and phlegm with all cigarette smokers, it is apparent that the excessive reporting of shortness of breath by the younger members of the group occurred in those who also had cough and phlegm.

F.E.V. VALUES

As for ventilatory function, men cigarette smokers had the lowest values at all ages and nonsmokers the highest, except in the youngest age group. Pipe and cigar smokers occupied an intermediate position and young ex-smokers had high values, whereas ex-smokers over 50 had low values. The mean values of $F.E.V._1$ in women hardly varied between categories.

In men the mean $F.E.V._1$ adjusted to the overall mean age of 40 years was 3.35 liters in nonsmokers and 3.12 liters in cigarette smokers; the corresponding values in women were 2.35 and 2.28 liters.

There are still unexplained differences in the relationship between cigarette smoking and respiratory symptoms; these include the higher prevalence of cough and phlegm in men than in women who smoked less than 20 cigarettes a day, and the low prevalence of cough and phlegm and shortness of breath in older women who smoked cigarettes.



The Effect of Aldosterone Antagonists on the Refractory Phase of Diuretic Therapy

—R. H. Seller et al (230 N Broad St, Philadelphia) *Arch Intern Med* 113:350 (March) 1964

After a 3-week control period, 24 patients in chronic congestive heart failure received hydrochlorothiazide, 100 mg twice a day, for six weeks. During the last three weeks, half of the patients received also 100 mg of triamterene, a potent aldosterone antagonist. During the first three weeks, the average edema loss (3 lb) was the same for both groups. During the last three weeks, the group receiving the aldosterone blocking agent demonstrated an additional weight loss of approximately 4½ lb., while no additional fluid loss was observed in the control group ($P<0.001$). A similar study with comparable results was performed by adding spironolactone A (100 mg twice daily) to patients who were receiving hydrochlorothiazide. The additional fluid depletion, which followed the administration of aldosterone blocking agents to patients receiving chroni chydrochlorothiazide therapy, is considered as evidence that the physiologic mechanism limiting the effectiveness of chronic oral diuretic therapy is hyperaldosteronism.

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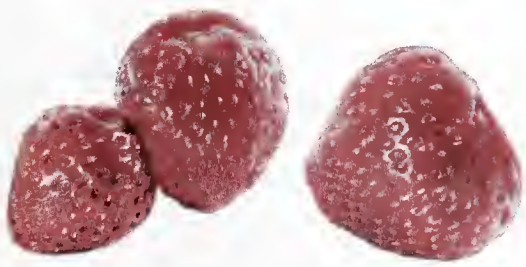
July, 1964

THE JOURNAL OF THE Arkansas MEDICAL SOCIETY

Vol. 61 No. 2

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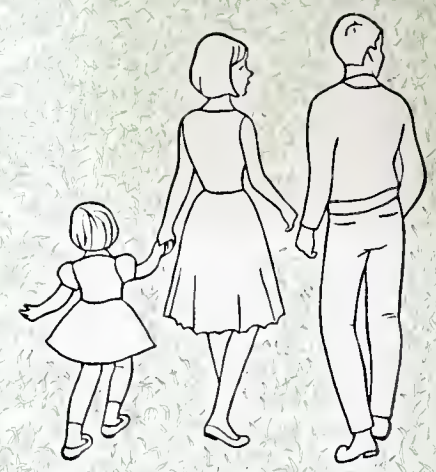
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DEPERSONALIZATION AND ALIENATION FROM SELF

Jack L. Rubins, M.D.*

One of the problems in considering this subject is our lack of precise definition of what the term refers to. Most psychiatrists have encountered patients who complained of the feelings we ordinarily would include under the term depersonalization. The general definition is that depersonalization denotes a feeling of strangeness or unreality or change in self, wherein the person has a conscious, rational subjective awareness of this state, and recognizes its abnormality. The change may be felt as imminent, as actively occurring or being already present. It may implicate the overall way of experiencing the self, or particular parts of the body, or one's thoughts, or the external environment (This latter form is also called derealization, although I feel that it is an externalized form of the self-experience). It may be more or less chronic, or it may be momentary and of acute onset. In classic psychoanalytic terms, one part of the ego in contact with reality has awareness of another part felt as unacceptable or ego-alien.

However, there are many variations of this feeling and other symptoms related to it, so that it is difficult to define the boundaries of the syndrome. Some authors stress the loss of affective responsiveness; others describe such symptoms as emotional blunting, detachment and emotional isolation. It is questionable whether these are all the same thing, and I feel that necessary distinctions have not been made enough.

A second problem is that this syndrome is found in many psychiatric conditions. Various forms are found in organic patients, in schizophrenia, in psychoneurosis — the so-called "pure depersonalization neurosis" of some writers—and in depressions. A study by Ackner in England[1] of a large number of patients in mental hospitals showing so-called depersonalization, found "no certainty that the authors discussing depersonalization were dealing with the same phenomena". He claimed that each form was different, depending on the primary mental condition, and therefore explainable differently. In the depressed patients, for instance, he felt that the criterion for improvement was not the relief of the depression but the disappearance of the depersonalization.

Another problem is the frequent confusion between two distinct aspects of the syndrome: the phenomenal or clinical, and the etiological or the active dynamic process which produces it. Although this distinction may be somewhat artificial and academic, it is still necessary to make it to clarify and define the clinical and theoretical concept. From the etiological viewpoint, depersonalization was initially considered as a pathological state in primarily libidinal terms. Schilder attributed it to a partial withdrawal of libido from the external world, which is then directed on to the self in the form of compulsive self-observation.[2] This results in the "negation" of emerging inner experiences, particularly sexual ones. He saw it as almost a necessary preliminary in the development of every neurosis and psychosis. This same erotization of thought was also emphasized by Oberndorf,[3] who based it upon an identification with the thought processes of the parent of the opposite sex. The depersonalization was thus a means of containment of the anxiety resulting from conflict between these opposing sexual identifications with the parents or between opposing sexual tendencies within the individual. The notion of conflict and anxiety has been extended by other authors, such as Blank[4] to include that caused by the emergence

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of anger or rage, or of feelings of emotional deprivation.

With the recent increasing attention to ego psychology, a number of analysts have re-emphasized the significance of the ego-split on one hand, and the role of perception on the other. For instance, Jacobson[5] ascribed depersonalization to the conflict between different fragmentary identifications within different parts of the ego: some of these are thus considered unacceptable, and so experienced as ego-alien. In relating this state to hypnologic states and the wish to fall asleep, Stamm combined both libidinal and ego factors.[6] He found strong oral-dependent regressive tendencies in his patients, and postulated a partial "intrasystemic splitting of functions" of the ego into partially autonomous nucleii. While Bellak considers this condition as being due to these same genetic factors, he does not see it as a pathological disease entity per se; it is rather simply an extreme variation of normal self-awareness and self-perception. He points out that it may be produced by such phenomena as stage-fright (anxiety), sudden changes in social role, or acute physiological disturbance of the sense-organs.[7] He also relates it to projection in that changes of perception of the self may produce changes in perception of the external world. This notion is carried a step further by Sarlin,[8] who postulates that the disturbance of perception of the self and of the world is really an estrangement from representations of the self or external objects within the ego. This is seen as being due to conflicting identifications earlier in life, and the persons identity is thus impaired.

I mention these changing concepts to emphasize several points. First that the extension from the libidinal to the ego explanatory theories, then to the perceptual and identity, indicate some basic inadequacy or lack of clarity in our understanding. My own feeling is that we must go even beyond these to a more holistic viewpoint, seeing both the dynamic and the phenomenological as aspects of a single dynamic process, involving growth in a healthy or neurotic direction.

In the second place, these ideas raise some most difficult psychological questions. For instance, it has been stated that depersonalization is a normal phenomenon, or at least a variant of normal self-awareness. But self-awareness is an extremely complex experiential process. It involves at least three forms of self-perception: the sense of identity (which itself is based on experiential identification with the unconscious body-image and self-concept) that has an intellectual-conceptual and an emotional-feeling aspect; as well as an immediate awareness of emerging inner emotional experiences. Disturbance in any of these functions may produce characteristic changes in self-experience. I mean by this that we may often experience some body-part or some inner activity as an object to the I who does the experiencing; or the same part may be experienced as subject, or as either or alternately as both. If I look at my hand, I experience it as an object; if I point my finger, it is subject, part of I doing the action; if I take a glass and hold it, the hand is both subject and object, going from one to the other. In other words, this subject-object shift may well be a perceptual illusion, a projection of the inner forces with which we identify at the moment in background and foreground. This, then, might be a normal psycho-physiological experience. However, there are individuals who experience most of their bodily and emotional activities as object, as occurring "there", who do not identify with their inner processes. These are people who "have" anger or sadness or joy, but who do not feel angry or sad or joyful. This I do not consider as normal, but as neurotic, even though it may be most frequent, the norm for many persons.

In the third place, I feel it is necessary to distinguish between precipitating factors in the production of depersonalization, and the underlying basic predisposing factors. Certain activities and conditions have been described which apparently produce the syndrome. Among these may be mentioned tension with excessive nuchal rigidity, hyperventilation, poor visual focusing, sudden role-changing, loss of loved ones, or sudden awareness of aggressive feelings. I submit that these factors are only secondary, and only activate or bring into awareness the psychological process which is already occurring within the individual. This process we might call the depersonalizing process, if we wish to retain the familiar term, but which I would prefer to describe as the process of alienation from self—a condition which has been described by Schilder,[9] Fromm,[10] and more particularly by Horney.[11] In fact a recent symposium was entirely devoted to this subject, which was

discussed from many angles (12-16). The full-blown syndrome classically called depersonalization would thus be a particular example or an extreme degree of this basic process.

It is not necessary to cite such special situations or conditions as examples of this depersonalizing or alienating process. There is a growing number of patients in general psychiatric and psychoanalytic practice today who do not fit into our previously held diagnostic categories. These are patients who come for therapy because of feelings of vagueness of identity, inertia, emptiness or deadness, poorly defined goals, dissatisfaction with their jobs or unhappiness over their position in life but not knowing what else to do or where to go, feelings of indecisiveness and lack of direction, or lack of meaning to life. Of course, they may also have some "typical" symptoms of neurosis or psychosis, psychopathic personality or depression; or we may call them borderline or schizoid, but such typical symptoms may not necessarily be prominent. The existential and social psychiatrists describe these patients as estranged or alienated. Some go so far as to say that modern man in general is alienated from himself, a malady of modern times.

In addition to this type of patient, we see many subtle evidences of such alienation in patients who come for other symptoms. For instance, there is the patient who constantly speaks in terms of "one" or "you" or "there are" instead of himself as "I". You get the impression he is talking about someone else, even though he is referring to himself. There are some who intellectualize and who seem to understand your interpretations, but who never let it touch them; this type I think would correspond to the compulsive self-observers described by the earlier classical psychoanalytic writers. Some never seem to get involved with their feelings, in spite of an apparent conscious understanding and acceptance of them. Others describe and experience their own inner events in terms of external occurrences or other persons, a type of individual who has been well described by N. Kelman.[17] This is not simply projection, but an externalization of most of their living processes, a living outside themselves. Another variety is the person who lives vicariously through someone else, who derives his sense of identity from an extremely close bond with another person, which Weiss has called the "magic mirror symbiosis", and Spiegel the "appersonated" individual.

Some patients may be angry or happy or sad and not be aware of it; and be astonished to the point of denial when you point out what they are showing. They may laugh or cry, yet deny feeling any emotion. Some are shocked to see themselves in the mirror or in home movies, or to hear their voice recorded—even allowing for the mechanical distortion. I have seen patients who changed their names or adopted aliases a number of times because they could not identify with their given name. Some may not experience joy or excitement or enthusiasm or any sentiment on seeing beauty or art or other stimulating event. One of my colleagues told me of a patient of his who could only decide how he felt in the morning on arising after he had seen his bowel-movement. They may complain of a fogginess or haziness in their feelings or thoughts in general, in their relations with other people and in their experiences. This vagueness of feeling may go over into curious disconnected states which border on the split personality or trance states, yet are not severe or intense or complete enough to be so considered. One interesting example was a patient who had been discussing with me how much he would like to take a southern vacation but couldn't afford it; he left the office wrapped up in the idea, took the subway home and on his arrival asked his wife if she had packed his valise. Her angry retort recalled him back to the situation.

Some patients are not completely aware of physical activities or body attributes. One such was astonished when asked why he was yawning, unaware that he was. Another claims she only knows when she has to eat because thoughts of food come to her, but has no feeling of hunger. There may be an actual numbness in their limbs or other parts of the body, or sometimes an impersonal attitude toward their body. The "belle-indifference" described by the French is an extreme example of this. They may often show a certain dullness or deadness in their eyes and face, a paucity of spontaneous body gestures or a poor connectedness with their movements.

This feeling of vagueness may be expressed in a feeling of discontinuity with their past history; they may have few or only hazy memories about their past, or feel no connection with their childhood or previous life. Times does not permit me

to give you other examples, but there are innumerable variations in the symptomatic expression of this basic process.

These are persons who are distanced or removed from their real or central core of being and experiencing. They do not experience themselves as live, palpitating individuals, directing their lives. The psychiatric diagnosis may vary with this same basic process, is in fact secondary. To see this condition as merely libido withdrawal or repression or denial, is to oversimplify and is entirely inadequate. These observations are of course, clinical and phenomenological descriptions, but I emphasize this descriptive aspect to make two points. The first is that this alienation may involve any or all aspects of the self. It may implicate physical parts and functions, emotions of all sorts such as anxiety, anger, sadness, joy, etc. —whether primarily arising from within or secondarily in response to outside stimuli; or it may involve thought processes, wants and desires, values, abilities and talents, identity or aspects thereof like sex, color, religion, name, etc.

The second point is that in order to understand the phenomenal nature of this alienating process, we have to consider the many functional elements which make up the self. It is beyond the scope of this paper to go into the many theoretical concepts now, some of which I mentioned before in connection with self-awareness. I need only refer you to the work of Erikson,[18] Jacobson,[19] Spiegel,[20] Schachtel[21] and my own papers on the Growth of the Self and Neurosis.[22] In brief, they would include such notions as the body-image and self-concept, the formation of self-identity by experiential identification with the self-concept, and the immediate sense of self. These are all different aspects of self. There may be poor self-identity with a good awareness of inner emotional activity; or vice-versa, a feeling of blunting of inner experience or strangeness of self with a relatively good self-identity. It is the self-identity which gives the feeling "I am I" constantly, in spite of changing internal or external conditions. It is immediate self-feeling which gives awareness of aspects of self-identity as they change, or as emotional values connected with such aspects may vary.

From the dynamic point of view, this process of self-alienation can be seen to begin in the child, and increase in severity as part of neurotic (or psychotic) development. Indeed, I feel that one of the major differences between neurosis and psychosis is precisely in the degree and extent of this alienation from self. The infant who is in an adverse parental environment of any kind and by this I mean the many neurotic attitudes of the parents, such as their being compulsively domineering, overprotective, emotionally distant, demanding of too high standards, or other—must adopt attitudes, feelings and behavior which will provide the greatest safety and security. If he does not, he faces the anxiety of loss of love, rejection and isolation from the parents. He must so mold himself by adopting personality traits which are not his own genuine, real ones. These attitudes eventually develop into compulsive characterological orientations needed to cope with this basic anxiety. They gradually thus move him away from his spontaneous self, his spontaneous ways of reacting, from his own identity, physical being and capacities. In adopting this defensive way of being, this artificial pseudo-self, this neurotic idealized image or self-concept, he rejects his real self with his constructive potentials and sources of growth. It is this moving away which constitutes the basic neurotic depersonalizing or alienating process.

In other words, the alienation in the adult is not only the end-result of neurotic development, but is also an active process. This process involves simultaneously the attempt to become or actualize the idealized version of ones self, and the active rejection of the hated, conflict-ridden actual self. As Weiss puts it,[16] it is the unconscious seeking for self-anesthesia and self-elimination. It is a complex attitude towards the self which is much more than simply denial or repression or avoidance.

I would see the process of identity-formation as a biological developmental one, continuing throughout life. It proceeds at the same time and parallel to the process of neurotic (or healthy) development. These two processes intertwine and influence each other. Different forms of impairment of these processes may produce characteristic forms of alienation. For instance, when there has been a faulty or fragmentary organization of the self-concept, then the neurotic alienation will be mainly characterized by a paucity of inner emotional experiences. When the disturbance involves primarily the formation of identity from

the self-concept, the alienation will mainly express itself as a feeling of distance from self and ones inner or emerging feelings.

This final personality state thus constitutes the substratum or soil for the depersonalization syndrome. It is a chronic state of alienation, in which any of the chronic symptoms mentioned above may be present. This substratum may be disturbed by any of the acute precipitating factors noted previously, to produce the acute symptoms of depersonalization. Actually I would suggest that this may occur when there is a sudden threat to the irrational idealized pseudo-identity with some awareness of the degree of alienation from self, or with some sudden awareness of some lack or incongruity of identity, or with some sudden interference with the process of immediate experiencing of self.

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CORRECTION

An error has been noted in the article "The Painful Stiff Shoulder" by Dr. Benjamin W. Drompp which appeared in the May issue. The next to last sentence on page 453 should read: "This technique of combination anti-inflammatory action of hydrocortisone and the local pain relieving qualities of the local anesthetic is effective in the conservative management of acute calcific tendonitis (as well as some amelioration of the chronic calcific tendonitis), the tenosynovitis of the bicipital syndromes, the incomplete tear of the rotator cuff, the frozen shoulder, or supraspinatous tendonitis of Codman, and the secondary sub-deltoid bursitis." And the last sentence in the Summary on page 454 should read: "The surgical aspects of treatment have been recommended only in special instances where conservative management has failed or the circumstances are such that better than average function is required of the shoulder."

THE ABSENTEE FAMILY MEMBER

Mrs. Viola W. Weiss*

THE FIELD OF SOCIAL WORK has historically been oriented to a concern for and interest in the family. In the first important book about social work practice ever written, Mary Richmond's *Social Diagnosis,* the necessity for getting to know all members of the family and their inter-relationships was made very specific. It was Miss Richmond's premise that, in order to be helpful to any individual family member, it was necessary that the social worker understand the external circumstances of the family and its internal functioning. This premise, despite the changes that may have occurred in social services in the fifty years or so since the publication of her book, still remains true for the field. When Miss Richmond was practicing, the clients of social service workers were exclusively the socially and economically disadvantaged. But it was, I believe, in 1919 that at a National Conference of Charities and Corrections a Red Cross worker made the suggestion that economically secure families could also profit from the services that social workers had to offer to indigent families. While the use of psychological and psychiatric theory that was added to the education of social workers tended to focus the work of some social workers on individuals, most fields of social work practice managed to combine the concern about individual and family. It was in Family Case Work and in Child Welfare, the two areas of social service that have traditionally been directed by social workers themselves, rather than being subject to the ultimate direction of another profession, that the focus on the family as the recipient of service was most consistently maintained and the temptation to become overly clinical most successfully resisted. But good social services, regardless of the setting in which they occur, continue to maintain the focus on the family of the client, even when the family unit itself is not the client.

It is undoubtedly easier to maintain this focus on the family when all the members are living together, but the person who for some reason lives away from his family is a family member still, even though on absentee status. The field of Child Welfare has devoted much of its work to dealing with the problem of absentee family members in its responsibility for planning and supervising the placement of children. As a result, we have developed a body of knowledge that relates directly to placement of children. The older absentee family member, the placed adult, seems not to have received the same kind of consideration in social services.

While there are many differences between the absentee adult and the child living away from home, an examination of the likenesses and differences may suggest some areas for further study of the problems of the placed adult.

Children are placed either because they need physical care that their families are not able to give them or because they need some kind of treatment which requires separation from their parents and perhaps requires a special setting like a residential treatment center. The request for placement may come from the child's family or may be imposed by a court. In either event, it is an axiom of child welfare that the child's family needs as careful preparation for placement as does the child. All parents of children about to be placed, even when they have initiated the request, experience a feeling of failure and accompanying guilt feelings about the fact that their child must go to live elsewhere. The parents of the children who are placed for treatment purposes are likely to experience these feelings even more strongly than those who are not able to care for their children because the court has deemed them unfit. The parents who request placement for a fairly brief time during the illness of the mother are likely to feel the least guilt, but even in this circumstance, these feelings often occur and are expressed through the concern of the parents that their children may grow to prefer the foster parents to their natural ones. Our concern for proper preparation of the parents is not only to help the parents, but because we know from experience that when the child's family is not adequately prepared for his absence, they will in some way manage to interfere with the placement in such a way that the child may be damaged, or at least be unable to get the maxi-

*Director of Planning and Education, Jewish Children's Home Service, New Orleans, Louisiana.

mum benefit from the placement.

The absentee family member who is an adult does not enter placement under the identical circumstances, but there may be similarities. When the adult enters the hospital for treatment of a physical illness, there is not necessarily any feeling of guilt on the part of the rest of the family. But there may be if his illness is a recurrence of an acute phase of some chronic disease. Did they put too much pressure on him for his own good? This may not be the actual fact, but if the family relationships had involved some conflict with the sick person, the rest of the family may react as if this were true. It is particularly likely to occur when the adult absentee has been placed in a psychiatric hospital. An adolescent boy recently referred to our agency for placement in a treatment center had been in some difficulty for a number of years, but the placement of his father in a state hospital about six months earlier seemed to be the precipitating factor in a series of near-delinquent acts committed by the boy. Both the boy and his mother were convinced that worry over the boy's poor grades had been one of the stresses that caused his father's illness. The mother has already hinted that as soon as the boy is placed, her husband is likely to be ready to come home. We do not know yet the extent to which the hospital personnel are aware of the family's view of the husband's illness. But we can anticipate that pressure to release the husband from the hospital will follow the placement of the son. In this family the mother seems to be making a choice between father and son, sending the boy away in order to get the husband back.

The problem related to the absentee member in this family is a product, at least in part, of one of the differences between the placement of a child and of an adult. The child is primarily a receiver of services by the family. The adult member is usually a provider of services. The absentee status of the adult therefore may mean a loss, not only of the person, but of the goods and services he has been contributing to the family. If the family of the placed adult has valued him more for what he was able to provide than for what he meant in emotional terms, the placement may be perceived as a desertion by the absentee and can thus provoke angry and resentful feelings in the rest of the family. These feelings will probably he held in check during the acute phase of the illness of the absentee, particularly if there is the threat of permanent separation through death. A prolonged convalescence in the hospital may stir up not only anger at the absentee as a deserter but even envy of his state of being cared for without responsibility. When the absentee's wife is a very dependent person, the envy can become quite open.

We know that the child in placement often suffers a sense of alienation in being away from his natural family. The improved physical surroundings which the foster family can provide, the more kindly and consistent care, perhaps even the absence of beatings, do not automatically make up for this sense of loss of part of himself. It is possible that separation from his family of the placed adult may present some similar problems for him. Family membership is an important part of the identity of the adult, also. This may be particularly true for the adult who has had almost all of his emotional needs met through his family. Fathers of lower income families may find in our society no place outside the family where they may exert any control over another person, or where they are not consistently under the control of a boss. In addition, there is little opportunity for such people to develop any pride in work skills, as the kinds of work they are likely to be doing will probably be routine and dull. The personal satisfaction and sense of accomplishment of the skilled artisan is not available to the man who works in a filling station, or on an assembly line. Since these people characteristically do not participate to any extent in community activities, the family may offer their only resource for emotional gratification and for reinforcement of their sense of identity. The absentee status may then, for the adult as well as for the child, produce a sense of alienation and the danger of some loss of identity.

In the field of Child Welfare we try to make separation less painful for the child by encouraging continued contact with the family through visiting plans and by having continued social work services given to the family of the child in placement. Continued social work service to the family of the placed child is vital for several reasons. First of all, placement is usually assumed to be temporary and the family needs help to improve the situation which necessitated placement in the first place. It is also imperative to

determine whether the family will be able to alter the circumstances responsible for the placement. If they cannot, it may be necessary for the Child Welfare agency to make plans for the child that do not include return to his own family. The return of the placed child to the family, particularly when the placement has lasted a year or longer, is a task requiring careful preparation of both child and family. The family structure is not static and, during the absence of the child, may have changed in such a way that the family no longer has quite the same place open to him. Or the pattern of relationships may have changed so that the ways the child once related to his parents or siblings are no longer appropriate. The family members thus must all be involved in the social work plan if the return of the child to his natural family is to be the culmination of a generally positive experience and not the occasion for precipitating another round of parent-child problems.

The continuing work with the family is easier to arrange when child and family continue to live in the same community though not in the same household. But distance is not a sufficient reason to fail to continue to work with both the family and the absentee child simultaneously. The Child Welfare Agency by which I am employed, The Jewish Children's Home Service, serves children from a seven state geographical area. Many of the children referred to us need treatment for emotional problems that require placement in a residential center that may be a thousand miles away from the family residence. In our agency we believe so strongly in the importance of concurrent work with child and family that we do not accept a child for placement unless a plan can be arranged for some social agency to be working with the child's family during the entire time of the placement. And such placements not infrequently last two to three years.

It seems likely that a similar procedure for work with the families of placed adults might enhance the treatment of the adult during placement and ease the return to his family when the placement is ready to be terminated. The family of the absentee adult in some respects must replace him during his time away. Some other means to support the family must be found while the husband is away. When the wife goes to work to provide the support, one of the important functions of the husband has been eliminated. And to judge from the experience of Family Agencies, once a wife goes to work, she is likely to continue working, at least from time to time, no matter whether the husband is at home or not. This is not necessarily bad for the family, but it does make for changes in the pattern of family relationships for which the absentee member may not be prepared. This brings up another point which is very important in Child Welfare, the necessity for the work with the family and with the child in placement to be correlated as much as possible, and at the least for the social workers responsible for child and for family to be in regular touch with each other, so that crucial events in the life of the family or of the placed child in placement can be shared.

When a child is placed, to some extent, time is on the side of treatment. A placement that lasts for a number of years may result in improved functioning of the child not so much because of the skill of those responsible for his care, but sometimes mainly because he is maturing and is gaining within himself an increased ability to deal with his life and with his surroundings.

For the placed adult, time may work against improved functioning. The prolonged placement in a hospital of an adult may result not in maturation, but in movement away from adulthood toward regressive behavior. A certain amount of this is an inevitable result of being a hospital patient for a prolonged period. Talcott Parsons pointed this out in his book, *"The Social System"*, when in a section he called the "Case of Modern Medical Practice", he enumerated what he called the institutionalized norms of the "sick role".[1] First, the sick person is exempted from normal social responsibilities. Second, the sick person is not held morally responsible for his illness; therefore, he needs to be cared for and can expect care. Third, the sick person is obligated to get well. And last, the sick person has a moral obligation to seek "technically competent help", that is a physician, and to "cooperate with him" in trying to get well. The societal exemption from normal social responsibilities is given only to children and to sick people. A brief illness may not produce much change in the sick person's orientation to his place in society. However, since

[1] Talcott Parsons, *The Social System*, The Free Press, Glencoe, Illinois, 1951, Chapter X, pp. 428-479.

the social roles of husband and father are achieved roles, not inherited ones, and thus are roles that depend upon role-oriented behavior, the absence of the hospitalized adult from the family, combined with the blessing of society for his repudiation of the accompanying social responsibilities, may produce a marked change in the position of the absentee in the family hierarchy. Since his role as patient now supersedes any family role, the tie to the family may become loosened. The patient is no longer a provider of services, as he was in his family roles. Now he has become a receiver of services, which is the position of a child in the family. He is a receiver not only from the hospital personnel, but also from his family who are expected by the hospital to "cooperate" in helping the patient, by which they usually mean not to worry him, not to demand anything of him, to write cheerful letters, almost to forget that he is someone on whom they can depend. Families may find these instructions very difficult to follow, because to do so can mean to them giving up all their ordinary expectations of the placed adult as a gratifier of needs. In a case we reviewed together in the workshop a woman who became very upset when her husband was hospitalized for a serious illness, moved to the town where the hospital was located, secured work to support herself and was able to visit him regularly. This action on her part was presented as being for the purpose of being able to comfort her husband and to help him, and it did. But the action also resulted from the fact that this woman had always been dependent upon her husband and by living in the same city and seeing him regularly, she was able to continue to depend upon him for emotional support and to maintain to a large degree their normal marital relationship. It might be a fruitful area for investigation to find out whether some kind of continued participation by the sick person in the family life would aid rather than interfere with his treatment in the hospital. Can the absentee status of the family member in the hospital be minimized so that he does not become a "patient" above all other things, so that his family membership can be maintained and so that his concept of himself will be as a person rather than as a sick person, without jeopardizing the medical treatment? It might be worth exploring.



Asthma and Temperature Change

—L. Greenburg et al (Eastchester Rd & Morris Park Ave, New York) *Arch Environ Health* 8:642 (May) 1964

There are few statistical studies dealing with the incidence of asthma and the possible causes for sudden asthma outbreaks. An epidemiological investigation of emergency clinic visits for asthma at three hospitals in New York City revealed a significant increase in asthma with the onset of the first or second cold periods in the fall months, when heating is required. Such increased asthma episodes did not appear related to pollens, molds, or levels of air pollution as currently measured. The relationship between increased asthma episodes and the onset of cold weather which acts as a triggering mechanism may be a geographically wide-spread phenomenon.

Survival of Staphylococci on Hospital Surfaces

—P. Skaliy (PO Box 769, Savannah, Ga) and G. W. Sciple *Arch Environ Health* 8:636 (May) 1964

The persistence of coagulase-positive staphylococci, type 52/52A/80, naturally seeded on surfaces and fomites by an infected patient or asymptomatic carrier, was investigated. The staphylococci recovered from the inanimate environment were identified with the source on the basis of phage type. Isolates with the same phage pattern as the infecting strain were recovered on the day the room was vacated and on the following day. Sampling of surfaces on days 7, 9, 12, 16, 22, 28, 35, 40, 48, and 50 failed to recover coagulase-positive staphylococci. On the 57th day after the patient left the room, four staphylococcic isolates were recovered from the floor. These did not react with the test bacteriophages and could not be traced to the patient or carrier.

WHAT'S NEW?



WHAT'S NEW IN SURGERY

John C. Baber, M.D.*

Surgery has always been reserved for the cases of duodenal ulcer that have not responded to medical treatment. During the past decade there has been a change in the surgical treatment of these cases. The first operation used early in the century was a gastroenterostomy to bypass an obstruction. This operation became popular in the United States and was used throughout the twenties. It soon became obvious that the recurrent ulcer, marginal ulcer, and gastro-colic fistulae that followed were more serious than the primary disease.

During this same period in Europe Billroth and Finister developed the sub-total resection with a gastrojejunostomy. Although it was accepted in this country much later, this procedure was the undisputed treatment for duodenal ulcer until recently.

The complications and mortality of this procedure depend on how difficult the duodenal stump is to close and the patient's ability to withstand the magnitude of the surgery. The mortality is low (1-5%) in elective surgery but high (up to 16%) in emergency surgery for massive bleeding.[1,2,3,17]

Although the recurrence of the ulcer is very low (less than 5% in most series) the morbidity from the operation itself is infamous.[4,5] In fact, a surgeon's results depend on how strict a criteria he uses to select his cases for surgery. He must determine the point when the symptoms and disabilities from the ulcer are more severe than those resulting from the operation. In 15 to 20 per cent of the sub-total resections the ill effects of the operation overshadow the benefits.[4,5] In these cases the dumping, malnutrition, weight loss, anemia, and weakness, are very often more severe than the original ulcer symptoms. These people are not satisfied with the reassurance that they no longer have an ulcer. Many of these patients have difficulty maintaining employment due to weakness, particularly those who do unskilled, arduous labor.

Dr. Dragstedt presented a paper in 1943, which seemed to be on the right track.[6] By interrupting the vagus nerve through the chest the cephalic phase of acid secretion could be eliminated. It became obvious in the forties that this was not the answer. These cases developed severe gastric retention, belching and diarrhea, that is, the side effects from atonic stomach complicated by a defective emptying mechanism due to the excess scarring in the duodenal ulcer at the pyloric ring.

Vagotomy with gastroenterostomy was performed on a large number of patients from 1945 to 1950. This was followed by a large number of recurrent ulcers.[7]

Dr. More states that the antrum, in addition to having a hormone that stimulates acid production, also has one that stops acid production only in an acid media.[8] This is the reason the gastroenterostomy has always failed, by itself or in combination with vagotomy. The alkaline secretion is always present to stimulate the acid production, but acid is not present to stop it.

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Dr. Weinberg first reported on vagotomy with pyloroplasty in 1954.[9] Since then he has reported over 1,000 cases.[10,11] His mortality for all cases including emergency operations for bleeding is less than one per cent. Only 6 per cent of the cases have any type of post-operative morbidity, including dumping and diarrhea, and less than 5 per cent have a recurrence of the ulcer.

There are conflicting reports in the literature on vagotomy in combination with a drainage procedure which do not always distinguish between pyloroplasty and gastroenterostomy.[2] These reports tend to give vagotomy with pyloroplasty a bad name, when if the cases are separated most of the trouble occurs in the vagotomy with gastroenterostomy.

Dr. Farris and Smith report 76 cases of vagotomy and pyloroplasty for duodenal ulcers with massive hemorrhage.[12] There were no operative deaths although three cases died of other causes after the bleeding was successfully controlled.

There are many reports concerning vagotomy with limited resection 50 per cent or less.[14] The reports are not startling. This procedure has the complications of both operations that is, difficulty closing the stump in the posterior penetrating ulcer, and difficulty from the atonic pouch following the vagotomy. This operation interferes with intestinal continuity and decreases the gastric reservoir, although the complications of the gastrojejumostomy are avoided. The mortality in the acute bleeder is higher than in vagotomy with pyloroplasty.

There are articles in the recent literature concerning pyloroplasty and selective vagotomy, that is, cutting only the branches that go to the stomach.[15] The selective vagotomy can be done on the anterior or left vagus without difficulty. Since technically this is a more difficult operation, the result in the reports so far do not justify the procedure.

Gastric freezing procedures have been mentioned in the medical journals and in the lay magazines in recent years. This is used on massive bleeders who are considered poor surgical risks. There are several large series being studied in the larger medical centers. The results suggest that this is not an innocuous procedure. There are a certain number that rupture following the freezing, which is not surprising since the beneficial results are derived from destroying the gastric mucosa. The acid production, in dogs at least, returns to the prefreezing level after one week.[16] This appears to be a difficult procedure to perform, requiring a lot of machinery and technical ability. It is felt that this work is not ready for private practice, but should be studied further in the large medical centers. It looks like this is a passing fad.

For the past few months I have been doing a vagotomy with a Finney type pyloroplasty in the treatment of complications of duodenal ulcer. I use the Finney type of pyloroplasty in order to avoid the difficulty with emptying of the stomach that is reported in the Heineke-Mikulicz type pyloroplasty. The Finney pyloroplasty is in essence a side to side gastroduodenostomy. The Heineke-Mikulicz pyloroplasty would not be indicated in the ulcer with obstruction or considerable scarring.

My reason for changing is the lower mortality and morbidity rates with this procedure. The mortality is lowered by avoiding the dissection of the duodenum, the difficult stump closure, and the overwhelming surgical trauma necessary in the greater procedure, particularly in the massive bleeder. A lesser morbidity can be expected by interrupting the cephalic phase of acid production, maintaining intestinal continuity, furnishing an adequate drainage procedure, and preserving the gastric reservoir. This procedure should eliminate the malnourished, underweight gastric cripple.

A 15-year follow up has shown no increase in ulcer recurrence over the subtotal resection. Many of these recurrences are found to be due to an incomplete vagotomy.

It is important to insure adequate drainage by performing a large pyloroplasty. In some cases this can be accomplished by a Heineke-Mikulicz type operation. In most cases where scarring and edema are present at the pylorio ring, a Finney type side to side gastroduodenostomy is necessary.

Summary: (1) The standard Billroth II type of subtotal resection and gastroenterostomy should not be done as an emergency operation for a massively bleeding peptic ulcer. The mortality here in the best hands is from 10 to 16 per cent. Vagotomy and pyloroplasty with suture of ulcer base can be performed with a mortality of one to two per cent. (2) The recurrent ulcer rate does not appear to be greater than in the Billroth II

resection. (3) Post-operative morbidity, weight loss, weakness, anemia and dumping, is less than in the Billroth II cases. (4) Vagotomy with pyloroplasty should be considered in all cases of peptic ulcer that require surgery.

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The Role of Castration in Breast Cancer

—B. J. Kennedy (University of Minnesota Medical School, Minneapolis) *Arch Surg* 88:743 (May) 1964

A comparison of the efficacy of prophylactic versus therapeutic castration revealed that the survival interval from initial primary tumor therapy to death was identical for either procedure. Therapeutic castration provides an index of the hormonal responsiveness of breast cancer, and thereby a guide to the selection of secondary therapies. Of patients responding to castration, secondary therapy for reactivated disease produced further improvement in 48% of the patients, but in only 10% of the non-responders. Therapeutic castration appears to be superior to prophylactic castration.

Metastatic Neoplasms of the Brain: Their Frequency in Relation to Age

—S. M. Aronson (451 Clarkson Ave, Brooklyn, New York), J. H. Garcia, and B. E. Aronson *Cancer* 17:558 (May) 1964

A retrospective survey of 9,114 consecutive, complete autopsy examinations was conducted to determine the frequency of central nervous system metastasis from various sites of primary extracranial malignant neoplasms and their variation with patient age. A total of 2,406 primary extracranial malignant neoplasms was found, with intracranial metastasis in 397 instances. The highest rate of nervous system metastasis was observed in the first decade of life, the rate diminishing in succeeding decades. The age-associated decline in rate of central nervous system metastasis was also noted in neoplasms arising from specific sites (eg, lung, breast).

TEACHING SEMINAR

University of Arkansas Medical Center
Little Rock, Arkansas



ENVIRONMENTAL CAUSES OF CONGENITAL DEFECTS

Stewart A. Fish, M.D.*

The magnitude of the problem of the congenitally malformed child has been emphasized repeatedly during the past several years. An estimated 260,000 children were born in 1963 with some type of developmental defect. It is obvious that this is a most significant problem, not only to the afflicted child and his parents, but to the entire medical profession.

The causes of abnormal fetal development are basically either genetic or environmental. The genetic causes make up the large number of defects which are due either to gene abnormalities transmitted to the embryo from one or both parents, or to new genetic mutations manifesting themselves first to the affected individual. The environmental causes of malformations are the external factors which injure or affect the developing embryo in such a manner that the delicate sequence of organogenesis is upset.

Significant research effort is being made in an attempt to discover the basic mechanisms involved in the production of birth defects, but much more time and effort will be needed before the final answer is found. Meanwhile, what can we do as physicians to reduce the toll taken by the two factors which have been mentioned?

Since the environment of the mother during pregnancy can be controlled to some extent, providing the patient seeks prenatal care, it seems reasonable and practical to attack the problem of congenital defects from this standpoint first. In order to do this the physician must be familiar with all of the environmental factors which are currently known to produce malformations in man and similar mammals. For the purpose of discussion these factors may be conveniently divided into nine groups.

1). *Mechanical Factors*: The human embryo is protected in utero in such a fashion that it is extremely unlikely external trauma to the mother can produce developmental defects without causing fetal death or abortion. No absolutely proven cases of such traumatic malformations are on record although from the medico-legal standpoint this may be the basis on which legal action is taken, especially following automobile accidents and other forms of personal injury. Unsuccessful attempts at instrumental abortion have been implicated as a cause of birth defects. If a child is born malformed following extensive intrauterine manipulations, the malformation is most likely the result of specific trauma to the fetus rather than a truly teratogenic effect on the developing child. The intrauterine amputation of limbs, which was thought at one time to be due to "amniotic bands" producing constriction and failure of development, has now been definitely shown to be the result of and not the cause of faulty development of the extremities.[1,2] Such bands represent inferior quality or a primary focal deficiency of limb mesenchyme.

2). *Temperature Changes*: Abnormal or rapidly changing temperatures may produce specific abnormalities in amphibia and occasionally in

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rats,[3] but the degree of temperature change required to produce similar anomalies in humans is probably not compatible with life. In addition the temperature regulating mechanism of the human is reasonably effective and intrauterine temperature probably does not reach high enough levels to be teratogenic even in febrile illnesses of the mother. Abortions or malformations following maternal febrile infectious diseases are probably due more to a viremia or septicemia than to increased intrauterine temperature.

3). *Radiation*: It has long been recognized that X irradiation can produce all manner of developmental defects in the human embryo when administered during the period of organogenesis.[4,5] After the first three months of gestation more subtle effects may be produced by x-ray and fetal disease or death may ensue if the dose is sufficient. This does not mean that all diagnostic x-ray studies should be precluded during pregnancy, especially when the fetus is near term and the exposure to the fetus is kept at an absolute minimum. The least amount of radiation needed to produce damage to the human fetus in utero has not been accurately determined. However, fetal malformations and abortion have been recorded following exposure to radiation of the degree required for barium enema, intravenous pyelography, gastrointestinal diagnostic studies and fluoroscopy. Because of this, all women of the reproductive age group should be questioned as to the possibility of pregnancy before undertaking any diagnostic x-ray studies involving the abdomen or pelvis and no elective abdominal examinations should ever be performed knowingly during the first trimester.

4). *Oxygen Deficiency*: Hypoxia is a potent cause of developmental defects in experimental animals.[6,7] Mental deficiency and other central nervous system problems have been seen in human offspring following periods of maternal hypoxia following carbon monoxide poisoning during pregnancy. The real problem of fetal oxygen deficiency is not so much that of its teratogenic action, but rather the long term effect on the growth and development of the central nervous system after birth. Periods of hypoxia during labor and delivery certainly should be avoided if at all possible and every attempt made to provide the fetus with an adequate oxygen supply at all times. The correction of maternal anemia during pregnancy, the rapid and effective treatment of placenta abruptio and placenta previa and the early aggressive treatment of hypertensive states in pregnancy will substantially contribute to the welfare of the fetus by reducing the degree of fetal oxygen deprivation which may accompany any of these conditions.

5). *Drugs and Medications*: All drugs used by man, if given in sufficient amounts, are poisons. Many medications in daily use which are commonly considered to be harmless (e.g. nicotine, caffeine and aspirin) are teratogenic and produce specific predictable fetal abnormalities when administered at the proper time of gestation to specific animals in adequate dosage.[8,9,10] In theory then, no pregnant woman should receive any drug of any kind during gestation. This is obviously an impractical suggestion. To withhold a necessary drug from a pregnant woman simply on the basis that it might possibly affect the fetus adversely would be injudicious. If this policy were followed, the fetal and maternal morbidity and mortality from the specific disease being treated would far outweigh the beneficial effect to the occasional fetus which would be spared. A reasonable and thoughtful approach to drug therapy in the pregnant individual must be practiced until the teratogenic risk of all drugs has been established and the mechanism of their action is fully understood. It would seem logical to suggest that the physician continue to administer to his pregnant patient, when necessary, drugs which have been proven by long use to have no apparent adverse effect on the fetus when given in the usual and recommended dose. The indiscriminate administration during pregnancy of many combinations of drugs of the use of medications of unproven toxicity is unwise because of the potential risk to the developing fetus, even though slight.

6). *Nutritional Disturbances*: In 1935, Hale[11,12] produced anophthalmia and microphthalmia in pigs by feeding pregnant sows a Vitamin A deficient diet. This study led the way to a large amount of experimental work which proved that maternal nutrition disturbances could produce various and predictable anomalies in the mammalian fetus. In addition to Vitamin A, riboflavin, folic acid and vitamin B_{12} deficiencies have been indited as causes of fetal malforma-

tions in experimental animals.[13,14,15] Whether nutritional and vitamin deficiencies are teratogenic in man is at present an unanswered question.[16] Since there are multiple interacting factors in the human diet, it is nearly impossible to identify or isolate a single specific dietary deficiency with accuracy. Long term statistical studies of certain ethnic groups in which dietary restrictions are a mandatory part of their religious beliefs or extensive studies of offspring born during periods of famine would shed light on this problem. It is not likely, however, that faulty maternal nutrition plays a major teratogenic role in the human. Supporting this idea is the fact that in certain areas of the world where the majority of individuals subsist on minimal diets, the overall incidence of birth defects is not significantly different from those countries in which maternal nutrition is considered adequate.

7). *Hormonal Disturbances*: It is not well established that hormonal imbalances of either maternal or fetal origin can produce developmental abnormalities in the offspring. Hyperplasia of the fetal adrenal cortex is known to cause pseudohermaphroditism of the female fetus or macrogenitosomia praecox in the male. Congenital cretinism is another example of intrinsic fetal hormonal disturbance affecting intrauterine growth and development.

At the present time, an important problem to the physician is the potential teratogenic effect of synthetic progestational agents on the external genitalia of the female fetus when these drugs are administered to the mother during pregnancy. Many synthetic progestins are quite similar to testosterone both chemically and pharmacologically. When given in fairly large doses early in gestation and continued for several months, masculinization of the female external genitalia can occur.[17] Again, this does not mean progestational agents, both synthetic and natural, should not be used in pregnancy when indicated. This observation serves to re-emphasize the importance of keeping the dose of any drug and the duration of treatment at a minimum therapeutic level during pregnancy.

8). *Infections*: During the past several decades, it has become apparent that the fetus is utero is susceptible to many types of bacterial and viral infections. The virus of rubella has an especially potent teratogenic effect when the fetus is exposed during the period of organogenesis. It has been estimated that between 17 and 50 per cent of offsprings will have major congenital defects when maternal rubella occurs in the first three months of pregnancy.[18,19] Many other virus diseases have little or no effect on the developing infant and the reason for the particularly damaging effect of the rubella virus is not yet known. Certain other conditions such as toxoplasmosis and cytomegalic inclusion disease may affect the fetus and produce hydrocephalus, microphthalmia, and other abnormalities recognizable at birth. This latter situation almost always represents the results of intrauterine disease in the normally developed fetus and not a true teratogenic effect of the infecting organism. The problem of maternal virus infections in pregnancy is an enormous one and not within the scope of this discussion. Since no adequate drug therapy against virus infections exists at the present time the physician should attempt to provide his patient with proper protective immunization against any infectious disease to which the mother has not had an opportunity to develop a natural immunity.

9). *Miscellaneous Environmental Factors*: A number of statistical investigations have been undertaken over the years in an attempt to correlate human developmental defects with such various factors as the season of the year in which conception occurred, locality of birth, population density, and climate. Obviously any such study is affected by many variables and is extremely difficult to interpret. There is, however, statistical evidence that the risk of congenital anomalies such as achondroplasia, anencephaly, hydrocephaly, and other gross malformations of the central nervous system increases with maternal age. In addition, about 40 per cent of mongoloid infants are born of mothers over 40 years of age.[20,21,22] In view of this, the physician may do his patient a service by encouraging her to complete her family by the age of 38 or 40. This suggestion would probably be most agreeable to the majority of women.

Conclusion: Any attempt to summarize all of the environmental factors which might possibly contribute to the defective development of the fetus must by necessity be incomplete since our present knowledge of these factors is so fragmentary. Despite a lack of complete understanding

of these problems, the practicing physician is in a position to help modify and frequently prevent the occurrence of events during pregnancy which might affect the fetus adversely. By doing so, the number of children born with developmental defects may be decreased significantly.

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Comparison of Anesthetic Methods in Elective Surgery

—J. J. Minster (Research-Education Hosps, Chicago) *Arch Surg* 88:728 (May) 1964

The charts of 437 adult herniorrhaphies and 24 young adult orchiopexies done at the University of Illinois, from 1955 to 1962, were reviewed in order to compare the post-operative courses of those patients receiving one of three methods of anesthesia. These three methods were general anesthesia via the endotracheal tube, general anesthesia via the mask, and regional anesthesia. One hundred and thirty-three similar patients, who could be closely compared except for the method of anesthesia, were divided among these three methods. In order to control all factors other than anesthetic method, each of these groups compares almost exactly in regard to age, anesthetic time, type of surgical procedure, and preoperative condition. The results showed an increased incidence of postoperative fever, nonoperative complications, and antibiotic usage in the endotracheal group as compared to the regional anesthetic group.

Increasing Surgical Significance of the Mallory-Weiss Syndrome

—R. J. Freeark et al (1825 W Harrison St, Chicago) *Arch Surg* 88:882 (May) 1964

Disruptions of the mucosa of the gastric cardia associated with massive gastrointestinal bleeding were first described by Mallory and Weiss in 1929. Long considered a pathological curiosity, experiences with 13 cases treated surgically at Cook County Hospital during the past four years suggest that prevailing concepts of the incidence, pathogenesis, diagnosis, and management need reappraisal. The clinical and operative findings in these patients are presented, and disappointing experiences with esophagoscopy, balloon tamponade, gastric hypothermia, and empiric gastric resection in the detection or control of bleeding are recounted. Suture repair of the cardial laceration through a long exploratory gastrotomy incision is recommended as the treatment of choice when bleeding proves excessive. The mortality rate of 46% is believed to reflect delay in surgical intervention and in the high incidence of associated disease, especially chronic alcoholism.

ELECTROCARDIOGRAM OF THE MONTH

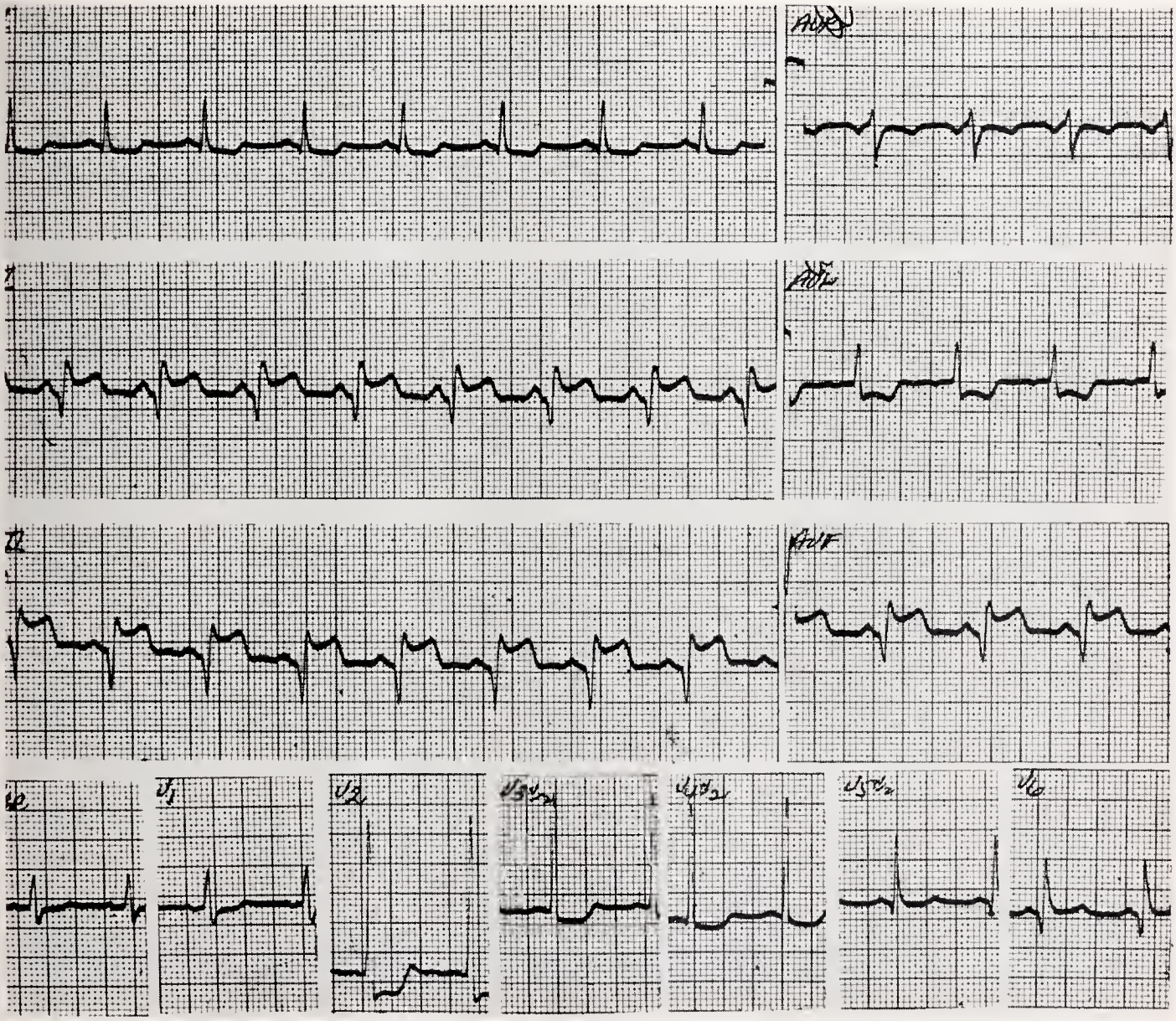
WHAT IS YOUR INTERPRETATION?

AGE: 50 SEX: M BUILD: MEDIUM BLOOD PRESSURE: 140 90

MEDICATION: None

HISTORY: Complaints of chest pain since rectal surgery 18 hours previously.

ANSWER ON PAGE 57



The Department of Medicine, University of Arkansas Medical Center

*James S. Taylor, M.D., Professor of Medicine

WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

ANSWER ON PAGE 57



DIAGNOSIS—(Continued)



18-34-94 57-year-old WM

HISTORY: This patient was asymptomatic. He had cutaneous telangiectasia characteristic of Rendu-Osler-Weber's syndrome. A bruit was found over the left chest.



PUBLIC HEALTH AT A GLANCE

RABIES

Harnie R. Ellis, D.V.M.*

Rabies in Arkansas is a substantial public health problem which presents many difficulties in management and control. The disease can be more than partially controlled if the rules and regulations pertaining to the vaccination of pet animals against rabies and the control of stray pets are properly enforced. The active antagonism of pet owners and the indifference of the general public, except during rabies "scares", quite often delays or prevents the application of effective control measures.

During the past five or six years extensive pet vaccination programs have made it possible to present a noticeable decline in canine rabies. This advantage has been neutralized to a large extent because of the appearance of rabies in many species of wildlife that are found in Arkansas. In 1963, high enzootic wildlife rabies existed in north central, central, and south central Arkansas. Many rabid wild animals have

*Director, Division of Veterinary Public Health, Little Rock, Ark.



Shaded portion indicates counties which have reported one or more cases of rabies during 1963.

been diagnosed in many communities located in the same areas in 1964.

The principal sylvatic rabies vectors in Arkansas are foxes, skunks, bats, bobcats, and raccoons. It has been proven many times that a high population level of a wildlife species is one of the factors contributing to rabies epidemics. Rabies in any of the above named species can become quite troublesome in a community. This condition is especially true when rabies is present in the skunk and fox species.

An epidemic of rabies in a wildlife species can completely annihilate a susceptible wildlife population in from three to five years. In addition to the destruction of the wildlife, great losses to valuable livestock, pets, and exposure to human beings may occur. The recommended control measures for situations such as this is a program for reducing that particular wildlife species involved down to a level of about 30% of the normal population.

Many states experienced a serious rabies problem among the insectivorous bats that inhabit or migrate across their areas. Arkansas had to contend with a rabid bat problem in 1963. During the year 1963, approximately 105 insectivorous bats were examined for rabies with 17 out of this number being positive for rabies. A constant information program was provided the citizens of Arkansas concerning the presence of rabies in bats. It is advisable to take the Pasteur treatment when the individual is exposed to the bite of a bat because the results of a laboratory examination for rabies in bats may be inconclusive. In addition, bats may tolerate rabies without symptoms for a rather long period of time.

In an outbreak of rabies the required control measures are: (A) Vaccinate all pet animals in the area with a potent rabies vaccine, (B) destroy all unvaccinated and stray pets in a humane manner, (C) if a wildlife species is involved it should be reduced in order to protect the pets, livestock, and citizens. A community, city, or county should not be content to live with a rabies problem. Just remember that the next victim of a rabid or suspected rabid animal may be you or a member of your family.

Stasis Gastric Ulcer: Complication of Duodenal Ulcer

—H. Hildebrand and F. B. Thomson (925 W Georgia St, Vancouver, BC) *Canad Med Ass J* 90:915 (April 11) 1964

A casual relationship between gastric stasis and ulceration is suggested by the literature reviewed. In obstructive duodenal ulcer disease it is important to know that a con-comitant gastric ulcer may be present and causing the symptoms. In combined ulcers symptoms are more severe and treatment more difficult. A clinical study of 60 cases of stasis gastric ulcer associated with chronic duodenal ulcer disease is presented. Twenty-six of these gastric ulcers were bleeding at the time of the patients' admission. The mortality rate was at least twice that for solitary ulcer. Early warning symptoms of stasis were fatigue, anorexia, fullness, and weight loss; vomiting was a late manifestation. X-ray findings were often inaccurate, evidence of retention was reported in only 21. Gastric residue measurements were particularly useful in showing gastric retention. Since the basic disease in combined ulcers in the duodenal lesion, surgical treatment is primarily that for duodenal ulcer.

Observations on the Possible Role of the Properdin System in Asthmatics in the New Orleans Area

—I. Krupp (210 State St, New Orleans) and R. Lewis *Ann Allergy* 22:113 (March) 1964

In the New Orleans area, blood samples were taken from asthmatics in both the acute and remission status and from non-asthmatics at three different periods from June, 1960 to July, 1961. The serum properdin levels were determined to ascertain whether a relationship existed between the properdin level and asthmatic response. Information was also gathered about air contaminants and meteorology. There is evidence of relationship between asthmatic status and properdin level in patients reporting histories of respiratory allergies; this is apparently not true with no reported history of allergy.



EDITORIAL

PROGRESS IN THE UNDERSTANDING OF TISSUE GAS TENSIONS, NERVOUS CONTROL OF CIRCULATION AND FREE FATTY ACIDS

Alfred Kahn, Jr., M.D.

THE USE OF LYMPH FOR THE measurement of gas tensions by Bergofsky, Jacobson and Fishman, Journal of Clinical Investigation, November, 1962, Vol. 41, pp. 1971. They elected to do this for 3 reasons: "As an index of the relationship between the oxidative metabolism of the tissue and its blood supply, as a measure of the gas tensions under which the metabolic processes of different tissues operate, and for the understanding of the interplay between external respiration, blood, and internal respiration." These studies of lymph are made with the assumption that the gases in lymph equilibrate with the gases in the tissues which the lymph bathes.

The studies indicated large differences in the gas pattern of lymph and blood. As would be expected, the Pco_2 of the lymph was higher than venous blood. The Po_2 of lymph was below that of venous blood. The authors suggest that these studies indicate that the tissues perform their metabolic activities at oxygen tensions much lower than venous blood; they do not feel that their studies are in error due to local metabolism by the lymphatic vessels.

Another interesting facet of this study is that regardless of the source of origin of the lymph, be it liver or bowel, or etc., had the same low Po_2, despite different types of metabolic function.

These studies confirmed that changes in pulmonary ventilation had a very slow effect in changing the Pco_2, even though the change in pulmonary ventilation was acute. Very little effect or respiratory changes in the lungs manifested itself in the lymph Po_2 since blood hemoglobin is fully saturated.

This study shows that the generalizations concerning gaseous metabolism of the tissues were in the right direction but this study more clearly defines the actual gas exchange, and shows that surprisingly low oxygen tension exists in the tissue.

A study of the effects of autonomic inhibition of circulatory response to exercise was performed by Kahler, Gaffney and Braunwald, Journal of Clinical Investigation, November, 1962, to demonstrate how the nervous system controls the intricate shunting of blood to various parts of the body in response to needs. It is analogous to a freight dispatcher sending railroad cars to the proper destination; remove the dispatcher and the cars are inefficiently handled. The authors inhibited the parasympathetic nervous system with atropine and the sympathetic with guanethidine. The subjects were six healthy men. Measurements were made of the following parameters: Oxygen consumption, cardiac index, heart rate, stroke volume index, mean arterial pressure, left ventricular stroke work, and left ventricular minute work.

The authors demonstrated that inactivation of the parasympathetic system by atropine resulted in increased work by the left ventricle, increased

pulse rate, and cardiac index during the resting control period, and the drug "did not interfere with the circulatory response to exercise." Sympathetic blockade by guanethidine did not materially change the cardiac output or arterial pressure at rest; the pulse rate slowed. After exercise, these parameters were all lower than prior to the ingestion of the guanethidine. Combined blockade of the sympathetic and parasympathetic systems produced a distinct decrease in the response of the heart to exercise as measured by stroke volume, cardiac output, and ventricular stroke work; for example, prior to use of the blockading drugs, the cardiac went up 96% in response to exercise; after using the drugs the response to exercise was an increase of only 30% in the cardiac index.

This investigation on human subjects underscores the importance of the nervous system in adopting the body to the stress of exercise. Although heart muscle has inherent contractility, the heart functions best when it is partially controlled by the autonomic nervous system.

There is a secondary rise in plasma free fatty acids following a glucose load, Bolinger, Shane and Kirkpatrick, Journal of Clinical Endocrinology, September, 1962, Vol. 22, p. 87, have investigated the effects on plasma free fatty acid by glucose. As others have noted, initially, the loading of a patient with glucose results in a fall in free fatty acids; in their subjects this was maximal in 1 hour. Three hours after the glucose administration, the free fatty acids were back to normal; in six hours, the level of free fatty acids was nearly twice normal. The secondary rise was of particular interest; the authors report that free fatty acids are released from fat tissue by adrenalin, ACTH, thyrotrophic hormone and prolactin. This study seems to indicate that hypoglycemia seems to mediate the rise in plasma free fatty acid via the sympathetic nervous system as blockading drugs stop the rise. Further, partial substantiation came from measuring the excretion product of the catecholamenes: 3 methoxy—4 hydroxy mandelic acid (VMA). VMA changes did not show a close correlation with the free fatty acid use but there were significant changes.

It was of interest that the cases which had the least drop in blood glucose level tended to have the greatest rise in free fatty acid levels.

ANSWER—Electrocardiogram of the Month

RATE: 92 RHYTHM: SINUS

PR: .16 sec. QRS: .07 sec. QT: .34 sec.

INTERPRETATION: Abnormal. Acute myocardial infarction, posterior.

COMMENT: Myocardial infarction occasionally occurs coincident with or after surgical procedures. In this instance the tall R wave in the right precordial leads does not reflect right ventricular hypertrophy, but is a mirror image of the significant Q to be found in leads from the opposite surface of the heart.

ANSWER—What is Your Diagnosis

DIAGNOSIS: Pulmonary A-V fistula.

X-Ray Features: The plain film of the chest shows a rounded circumscribed mass in the left lower lung field which might be considered a "coin" lesion. However, large vessels are seen entering and leaving this mass. The angiogram shows opacification of these vessels and demonstrates that the mass is an arteriovenous communication.

The abnormality is a fistulous communication between smaller pulmonary arteries and veins which gradually enlarges to produce a right to left shunt and may be associated with unsaturation of the arterial blood. These malformations are more frequently multiple than single and usually occur in the lower lobes. The association with hereditary telangiectasia is common.

MEDICINE IN THE NEWS

Dr. Easley Becomes President of Association

The Association of State and Territorial Directors of Local Health Services conducted the 1964 biennial meeting in San Francisco, California, during the period May 6-8, 1964. Dr. Edgar J. Easley, Assistant State Health Officer and Director, Bureau of Local Health Services, Arkansas State Health Department, became President of the Association on May 8, 1964 and will serve for two years. He presented an Arkansas Traveler Certificate to the retiring President, Dr. Luther P. Walter of Austin, Texas.

Fifteenth Anniversary of Association of Tumor Clinic Staff Members

The Association of Tumor Clinic Staff Members in Arkansas observed its fifteenth anniversary in joint scientific session with the Arkansas Medical Society, Monday morning, May 4, 1964. The subject, "Differential Diagnosis and Management of Pulmonary Lesions," was discussed from different points of view.

Dr. Dinning to Continue Work Overseas

Dr. James S. Dinning, who is on a medical mission in Thailand under leave from the University of Arkansas Medical Center, has decided to continue his work overseas on a permanent basis. While in Little Rock, Dinning served as chairman of the department of biochemistry at the Medical Center as well as assistant dean responsible for Medical Center graduate programs.

Grant Presented to University of Arkansas School of Medicine

On May 5th the Arkansas Medical Society presented a grant of $7,841.86 to the University of Arkansas School of Medicine. Dr. Joe Verser of Harrisburg, president of the Arkansas Society, presented the check to Dr. Winston K. Shorey, dean of medicine, during the Society's annual convention.

New Members Installed in Alpha Omega Alpha

Thirteen new members of the honorary medical society, Alpha Omega Alpha, were installed during an annual lecture program at the University of Arkansas Medical Center Friday, May 15th.

Robins Addresses Nebraska Medic Meetings

"Health is a bargain, funerals are expensive, and the difference is so permanent," said Dr. R. B. Robins, Camden, Arkansas, in addressing the Nebraska State Medical Association annual meeting in Lincoln, Nebraska. Dr. Robins addressed the Nebraska annual meeting twice on "Health Is a Bargain" and "The Expanding Population."

Missouri Physician Speaks at U of A Medical Center Graduation

Dr. Vernon E. Wilson, Dean of the School of Medicine and Director of the Medical Center at the University of Missouri in Columbia, was the commencement speaker for graduation exercises of the University of Arkansas Medical Center this year.

Estimated Teaching Responsibilities of Full-Time Faculties in U.S. Medical Schools, 1962-1963

A significant growth has occurred since World War II in the numbers of students other than undergraduate medical students that are taught by medical school faculties.

Increased research activity has stimulated expanded enrollments of graduate and postdoctoral students and research fellows in medical school basic science and clinical departments. Greater emphasis on continuing medical education courses for practicing physicians has multiplied the demands on faculty time over and above the traditional commitments to undergraduate medical students, interns, residents, dental and pharmacy students, nurses, and other students or

trainees in the various allied health professions and services. Such diversified responsibilities, and the variations in number and characteristics of the student bodies have a direct bearing on staffing patterns, budgeting, and educational programming for each of the separate medical schools. However, this Datagram pertains exclusively to the first of these considerations and deals with the total teaching load of full-time faculty members only. In most medical schools, full-time faculty members are assisted by physicians in private practice who teach on a part-time basis.

The numbers of the various categories of part-time students are not in themselves significant in that the amount of faculty time and effort required for each may vary widely. A more accurate estimate of total teaching responsibility is obtained by expressing total teaching load in terms of full-time medical students. For example, in one school 99 dental students were considered to require the same faculty time and effort as 33 undergraduate medical students. Similarly 241 enrollees in continuing education courses were estimated to require time and effort equal to that for teaching three full-time medical students (See footnote). "Total student equivalents" refers to full-time students plus all other students expressed in terms of full-time medical student equivalents. Interns, residents, graduate students, and post-doctoral fellows are all considered as full-time students. The teaching responsibility of full-time faculty members is properly measured only when all the components are accounted for. The information for this Datagram was submitted by the medical schools through the Annual AMA-AAMC Questionnaire.

THE MONTH IN WASHINGTON

Washington, D.C.—The American Medical Association and the American Pharmaceutical Association have warned Congress that too stringent regulations for clinical testing could result in valuable new drugs not being approved.

The two associations testified before a House Government Operations subcommittee, headed by Rep. L. H. Fountain (D., N.C.) during its study of drug safety requirements from both government and industry aspects.

In another development, a federal district court held that regulations of the U.S. Food and Drug requiring repetition of the generic names of prescription drugs in labeling and advertising each time brand names are mentioned are not valid.

After a Silver Spring, Md., physician pleaded "no contest" to five counts of an indictment, the FDA said it would recommend that the Department of Justice take vigorous action against anyone suspected of falsifying drug research records. The Silver Spring physician had been indicted on charges of submitting false reports of clinical studies of five new drugs.

"While scientists in general have the highest integrity and the falsification of research data is the rare exception, this Agency views such falsification when it does occur as a menace to the public health," FDA Commissioner George P. Larrick said.

The American Medical Association testified that "even the most extensive pre-marketing clinical tests cannot always be relied upon as completely predictive of human toxicity."

Dr. Hugh H. Hussey, director of the AMA's Division of Scientific Activities, told the subcommittee that "it is entirely possible that more lives could be lost by keeping a valuable drug off the market during extensive clinical trials than would be saved by gaining a precise knowledge of the exact type and incidence of all side effects."

"Physicians realize that no drug can be considered completely safe. There is always an element of risk, no matter how small, whenever a chemical agent is administered to a patient. That risk can be minimized by adequate animal testing and pre-marketing clinical trials; it can never be eliminated."

Cautioning against government regulations that become unnecessarily burdensome and restrictive, Dr. Hussey said the vital knowledge about drug toxicity "can be obtained only by utilizing the combined experience of the ultimate evaluators of drug safety – the well informed practicing physicians of the United States."

He pointed out that it is now known that the antibiotic chloramphenicol (Chloromycetin) can produce aplastic anemia.

"The incidence of this adverse reaction has been estimated from as much as one in 60,000 to as little as one in 225,000," he noted.

"Using the high incidence figure, it can be seen that, statistically, it would be possible to treat 60,000 patients with the drug before a single case

of aplastic anemia occurred," Dr. Hussey testified. "It is impractical and unreasonable to conduct clinical tests of this magnitude."

"Like animal tests, then, pre-marketing clinical trials are subject to certain limitations and can never supplant widespread clinical use as a means of assessing the ultimate hazards of a drug."

The American Pharmaceutical Association said that it was "concerned that the hysteria of the moment about drug safety could develop into an unwritten protocol of indecision and delay."

William S. Apple, executive director of the APA, said "the general public and individual patients must be informed that a benefit-to-risk ratio will always exist, and that every effort is being made to reduce the risk and increase the benefit."

* * *

The American Medical Association has reiterated its opposition to military veterans getting free hospital services for non-service-connected disabilities and illnesses.

Dr. Russell B. Roth of Erie, Pa., a consultant at the Erie Veterans Administration Hospital, and Dr. David B. Allman of Atlantic City, N.J., a past president of the AMA, spoke for the AMA at a hearing of the House Veterans Subcommittee that was considering legislation that would expand the free government hospital services available to veterans with non-service-connected medical conditions.

Roth singled out for special criticism two bills that would expand outpatient services.

"At the lowest estimate," Dr. Roth said, "these two bills would make some four million men eligible for complete outpatient care, dental as well as medical; either bill alone would make over two million men eligible, without regard to either a medical determination of service connection or the veteran's ability to meet the cost of such care.

"During my years on the (AMA) Committee on Federal Medical Services, I have often heard the claim that the provision of VA care for the veteran with non-service-connected disabilities consists in the main of the provision of care for veterans who are sick, broke, and have no place to go. There is no question that these bills would include many veterans who meet this description in each respect. However, they would also include a significant segment of our adult male population which would be made eligible to receive complete out-patient services at the expense of the taxpayer and without regard to the veteran's financial need."

Dr. Allman reviewed the Association's two general policies on the question of federal responsibility for veterans' medical care:

"—The first, that the best medical care possible should be provided to veterans who need treatment for conditions incurred or aggravated by their military service;

"—And the second, that the best possible medical care should be available to all Americans.

"On the basis of these principles, in 1953, the American Medical Association reached the firm conclusion that the primary purpose of the Veterans' Administration medical and hospital program should be the provision of care to veterans with service-connected disabilities.

"The medical profession has *always* held that the veteran who has suffered injury in the service of his country, the veteran who has an illness incurred during the course of his military service, and the veteran whose illness was aggravated as a result of his military service, has a *right* to care for those illnesses and disabilities at government expense. This is but a legitimate repayment for his sacrifice . . .

"We believe that it is *not* the nation's responsibility to provide care for civilian disabilities simply because the civilians are men who spent time in uniform. It is not a question of the merit of these men, or whether they served their country truly and well. It is solely a question of the proper range of federal responsibility."

THINGS TO COME



University of Arkansas Medical Center Library

The Medical Center Library serves as a state agency to meet the literature needs of the medical profession throughout Arkansas. The Library's staff will conduct literature searches on any subject pertaining to medicine on request from Arkansas physicians. Books and monographs are loaned for one month, the only charge being return postage. Journal articles are usually sent as

photocopy—again free of charge—which need not be returned to the Library.

Tennessee Valley Medical Assembly

The Tennessee Valley Medical Assembly will be held at the Tivoli Theater, Chattanooga, Tennessee, September 28-29, 1964. Dr. Rudolph M. Landry, 109 Medical Arts Building, Chattanooga, Tennessee, is the chairman.

Chest Physicians Plan Mexico Congress

Physicians from more than 50 countries will present papers and discuss the recent advances in cardiovascular and pulmonary diseases at the VIII International Congress on Diseases of the Chest to be held in Mexico City, October 11-15, 1964.



NEW MEMBERS

Ouachita County Medical Society announces that DR. WILLIAM H. WYCKOFF is a new member. He was born at Iowa City, Iowa, and received his preliminary education at the University of Oklahoma. In 1949, he received his M.D. degree from the University of Arkansas School of Medicine. He practiced in Europe from 1950 until 1952; in Africa from 1952 until 1954; and in New Orleans, Louisiana from 1954 until 1963. Dr. Wyckoff's office is located at 917 Washington in Camden, Arkansas. His specialty is ophthalmology.

DR. H. B. BRANDON is a new member of the Washington County Medical Society. A native of Jasper, Arkansas, he attended Harrison High School and then he enrolled at the University of Arkansas. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1958. Dr. Brandon's specialty is urology and his office is at the Evelyn Hills Shopping Center in Fayetteville, Arkansas.

Washington County Medical Society announces that DR. RICHARD J. BRIGHTWELL has been added to its roster of members. Born at Hugo, Oklahoma, he received his pre-medical education from high school in Oklahoma City, Oklahoma. His medical education was obtained from the Oklahoma University School of Medicine from which he graduated in 1941. He served in the U. S. Armed Forces from 1942 until 1963. Dr. Brightwell's office address is 34 West North, Fayetteville, Arkansas. His specialty is preventative medicine.

A new member of Pulaski County Medical Society is DR. HAROLD H. HEDGES. He is a native of Fort Smith, Arkansas, and he received his pre-med from the University of Arkansas. He then enrolled at the University of Arkansas School of Medicine and received his M.D. degree in 1958. Dr. Hedges is a general practitioner with his office at 814 North University in Little Rock, Arkansas.

Pulaski County Medical Society announces that DR. JAMES V. FLACK, JR. is a new member. He was born at Mabelvale, Arkansas, and completed his pre-med at Hendrix College. He was graduated from the University of Arkansas School of Medicine in 1958. His office address is 814 North University in Little Rock, Arkansas. Dr. Flack is a general practitioner.

DR. WILLIAM G. DARWIN has been added to the roster of members of Conway County Medical Society. He was born at Hope, Arkansas, and completed his pre-med at Hendrix College in 1955. In 1959, he was graduated from the University of Arkansas School of Medicine. Dr. Darwin's office address is 200 South Moose in Morrilton, Arkansas. He is a general practitioner.

Conway County Medical Society announces that DR. JOSEPH H. LYFORD is a new member. A native of Helena, Arkansas, he received his preliminary education from Hendrix College. He

received his M.D. degree from the University of Arkansas in 1961. He completed his internship at Hillcrest Medical Center in Tulsa, Oklahoma. Dr. Lyford is a general practitioner with his office at 200 Moose Street in Morrilton, Arkansas.

A new member of Union County Medical Society is DR. ERNEST R. HARTMANN. He was born at Hawthorne, New Jersey, and received his preliminary education from Vanderbilt University and Franklin and Marshall College. He then enrolled in the University of Pennsylvania School of Medicine and received his M.D. degree from there in 1949. He practiced in Monroe, Louisiana from 1960 until 1963. Dr. Hartmann's specialty is orthopedic surgery and his office is at 504 West Faulkner in El Dorado, Arkansas.

DR. RONALD M. LEWIS is a new member of Union County Medical Society. A native of El Dorado, Arkansas, his preliminary education was received from Louisiana Polytechnic Institute in Ruston, Louisiana. He was graduated from the University of Arkansas School of Medicine in 1958. He completed his internship at Parkland Hospital in Dallas, Texas. Dr. Lewis' office is 1201 West 7th Street in El Dorado, Arkansas. He is an anesthesiologist.

Union County Medical Society announces that DR. R. J. JONES is a new member. He was born at El Dorado, Arkansas and received his preliminary education from Henderson State Teachers College. He then enrolled at the University of Arkansas School of Medicine and received his M.D. degree from there in 1959. He served in the U.S. Army from 1959 until 1963. Dr. Jones' address is 1400 Pershing Highway, Smackover, Arkansas. He is a general practitioner.

A new member of Jackson County Medical Society is DR. WILLIE R. HARRIS. A native of Monroe, Louisiana, he received his pre-med at Central Missouri State College at Warrensburg, Missouri. He then enrolled at the University of Arkansas Medical School from which he was graduated in 1961. He served his internship at the University of Arkansas Medical Center. Dr. Harris completed four years in the U.S. Air Force. His office address is Harris Hospital in Newport, Arkansas. He is a general practitioner.

DR. ROGER L. GREEN is a new member of Jackson County Medical Society. He was born at Doniphan, Missouri. His pre-medical education was received from the University of Missouri and he received his M.D. degree from the University of Missouri School of Medicine in 1960. He completed his internship at Baptist Memorial Hospital in Memphis, Tennessee. Dr. Green is a general practitioner with his office at 2nd and Lauren in Newport, Arkansas.



PERSONAL AND NEWS ITEMS

Annual American Motors Conservation Award

Dr. Neil Compton, a Bentonville, Arkansas, physician whose avocation is conservation has been named winner of an annual American Motors Conservation Award. Winners are selected by an awards committee on the basis of dedicated work in the field of renewable natural resources which would not otherwise receive widespread public recognition.

1964 OFFICERS—COUNTY MEDICAL SOCIETIES—ARKANSAS MEDICAL SOCIETY

ARKANSAS—Pres. Joseph E. Cross, DeWitt
Secy. Francis M. Henderson, Stuttgart

ASHLEY—Pres. Charles E. Hicks, Hamburg
Secy. C. E. Ripley, Crossett

BAXTER—Pres. Maxwell G. Cheney, Mountain Home
Secy. Ben N. Saltzman, Mountain Home

BENTON—Pres. Charles Stinnett, Siloam Springs
Secy. B. J. Puckett, Siloam Springs

BOONE—Pres. Van Smith, Harrison
Secy. William A. Hudson, Harrison

BRADLEY—Pres. W. C. Whaley, Warren
Secy. G. F. Wynne, Warren

CARROLL—Pres. Oliver Wallace, Green Forest
Secy. Ross Van Pelt, Eureka Springs

CHICOT—Pres. Allen G. Talbot, Lake Village
Secy. G. C. Johnston, Lake Village

CLARK—Pres. J. W. Kennedy, Arkadelphia
Secy. H. D. Luck, Arkadelphia
Executive Secy. Mr. Howard Campbell, Clark Co. Hospital, Arkadelphia

CLEBURNE—Pres. Nathan L. Poff, Heber Springs
Secy. D. H. McClanahan, Heber Springs

COLUMBIA—Pres. Evan G. Houston, Magnolia
Secy. John L. Ruff, Magnolia

CONWAY—Pres. Gastor B. Owens, Morrilton
Secy. Thomas H. Hickey, Morrilton

CRAIGHEAD-POINSETT—Pres. B. P. Raney, 207 Hughes Drive, Jonesboro
Secy. Orval E. Riggs, 806 Jeter Drive, Jonesboro

CRAWFORD—Pres. M. C. Edds, Van Buren
Secy. Jack Thicksten, Alma

CRITTENDEN—Pres. Jim Wright, Earle
Secy. James Fall, West Memphis

CROSS—Pres. Vance J. Crain, Wynne
Secy. Thomas G. Price, Wynne

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BOOK REVIEWS

THE REGULATION OF HUMAN RESPIRATION; Ed. D. J. C. Cunningham and B. B. Lloyd. Philadelphia. F. A. Davis Co. 1963, 591 pp.

This book reports the proceedings of a conference honoring the centenary of John Scott Haldane's birth. The conference was attended by more than a hundred experts from all over the world and the book contains original papers by forty authors. The reader who grows tired of dispassionate scientific prose will be delighted with the first hundred pages of warm tribute to Professor Haldane. The most beautiful, written by C. G. Douglas, was first printed in 1936 as an obituary notice of the Royal Society of London.

Part of J. S. Haldane's success hung on improving the methods of gas analysis. His studies clarified a variety of atmospheric disorders in the coal mines and his recommendations resulted in improved working conditions for countless thousands of miners. He suggested the use of small animals for warning against hypoxia—reasoning that the mouse, because of a high metabolic requirement, would encounter hypoxic difficulty more quickly than man. The system was successful and was used for many years. He studied the physiology of diving prior to World War I and, because of his recommendations, diving protocol was completely revised with a great saving of human life and some saving of time. Because of his interest in respiratory regulation, he was one of the original mountain-climbing physiologists. The balance of Professor Haldane's success, however, depended on his extraordinary ability to apply basic knowledge. This permitted him to solve many clinical problems with apparent ease—as once when he unexpectedly identified hookworm disease as the source of trouble in a mine suspected of bad air.

The bulk of the text offers detailed considerations of central and peripheral chemoreceptors, intra- and extracellular pH, respiratory adaptation to altitude, to muscular exercise, and the study of inhaled particles. The scholars devoted attention to whether hydrogen ions, or dissolved carbon dioxide, provide the ultimate central stimulus for ventilation, and although techniques for separating their effects seem to be improving, the question was not settled with finality.

Robin presented some fascinating studies of intra-cellular pH and pointed out that the brain has no extra-cellular fluid other than the cerebrospinal fluid. This brings up the knotty requirement for a great deal more knowledge about intra-cellular events before all facets of respiratory regulation can be understood. The excellent cross circulation studies of Kao demonstrate clearly that lateral column afferents (related to "motor" nerves) serve as stimuli for hyperpnea during exercise. The quality of the text material is very high although the discussion periods tend to be stuffy, since the chairmen avoided direct conflicts at all costs, and abruptly changed the topic of discussion whenever an argument began to develop—but perhaps there was time to argue at tea.

Although John Scott Haldane was a perfectionist, he would be pleased with the literary monument erected by this conference in his memory. As the only comprehensive collection of modern essays on respiratory control, the volume will live for many years and serve well many future students of acid-base balance and respiratory regulation.

THE LUNG AND ITS DISORDERS IN THE NEWBORN INFANT, by Mary Ellen Avery, A.B., M.D., Assistant Professor of Pediatrics, Johns Hopkins University, School of Medicine, Pediatrician-in-charge, Newborn Nurseries, The Johns Hopkins Hospital, pp. 224, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1964.

This book is well written and illustrated. It is of value to the pediatrician and general physician. It is the first in a series entitled "Major Problems in Clinical Pediatrics." Of major importance in this book are the chapters on resuscitation of the infant. AK

CURRENT PEDIATRIC THERAPY, edited by Sydney S. Gillis and Benjamin M. Kagan—Philadelphia—W. B. Saunders, 747 pp. $16.00.

This is a difficult book to review. Most therapy is routine, however, in some areas there is disagreement. The editors of this book have chosen excellent contributors who can speak with authority. In most cases, the various types of therapy for the same disease are discussed giving the physician advantage of using what he thinks best. Some of the authors dwell upon diagnosis a little too much for a therapy book but in some diseases this cannot be avoided.

This book can be highly recommended for those who treat diseases of children. TT

HANDBOOK OF PEDIATRICS: by Henry K. Silver, C. Henry Kempe and Henry B. Bruyn, 602 p. $4.00, Large Medical Publications, Los Altos, California, 1963.

For one who needs a quick reference on pediatrics, this is a good book. It is small and can be carried in one's bag or packet. The tables and charts are taken from good to excellent sources. Most everything is covered.

A few things worth mentioning are the Fluorescein String Test on page 28 which is not too commonly known and may be of great help in differential diagnosis. The umbilical hernia as a rule does not require local treatment. The test for checking Phenylketoruria on page 425 is cheap and useful. Trichinosis is not a very common infection in this country but is frequently unrecognized.

This book may be getting too big for its purpose. The chapters on Emotional Problems and Adolescence could be left out.

PERSONNEL IN WORLD WAR II, prepared and published under the direction of Lieutenant General Leonard D. Heaton, The Surgeon General, United States Army, Editor in Chief Colonel John Boyd Coates, Jr., MC, USA, Editor for Personnel Charles M. Wiltse, Ph. D., Litt. D., pp. 548, illustrated, Office of the Surgeon General, Department of the Army, Washington, D.C., 1963.

To the many physicians who were on medical duty in World War II, the Medical Department's book entitled "PERSONNEL IN WORLD WAR II" will be of considerable interest. It will also be of interest to physicians in military medicine. This book largely discusses the composition of the Medical Department, procurement policies, classification and utilization of personnel. Actually, this book comprises, without its index, 513 pages. It not alone discusses the use of physicians but also medical, dental and veterinary personnel. The Nurse Corps is also discussed. This book has numerous tables which would be of great value to the career physician in the military service. To the casual reader, perhaps the most interesting part of this book is the first 52 pages which are devoted to organization and administration.

August, 1964

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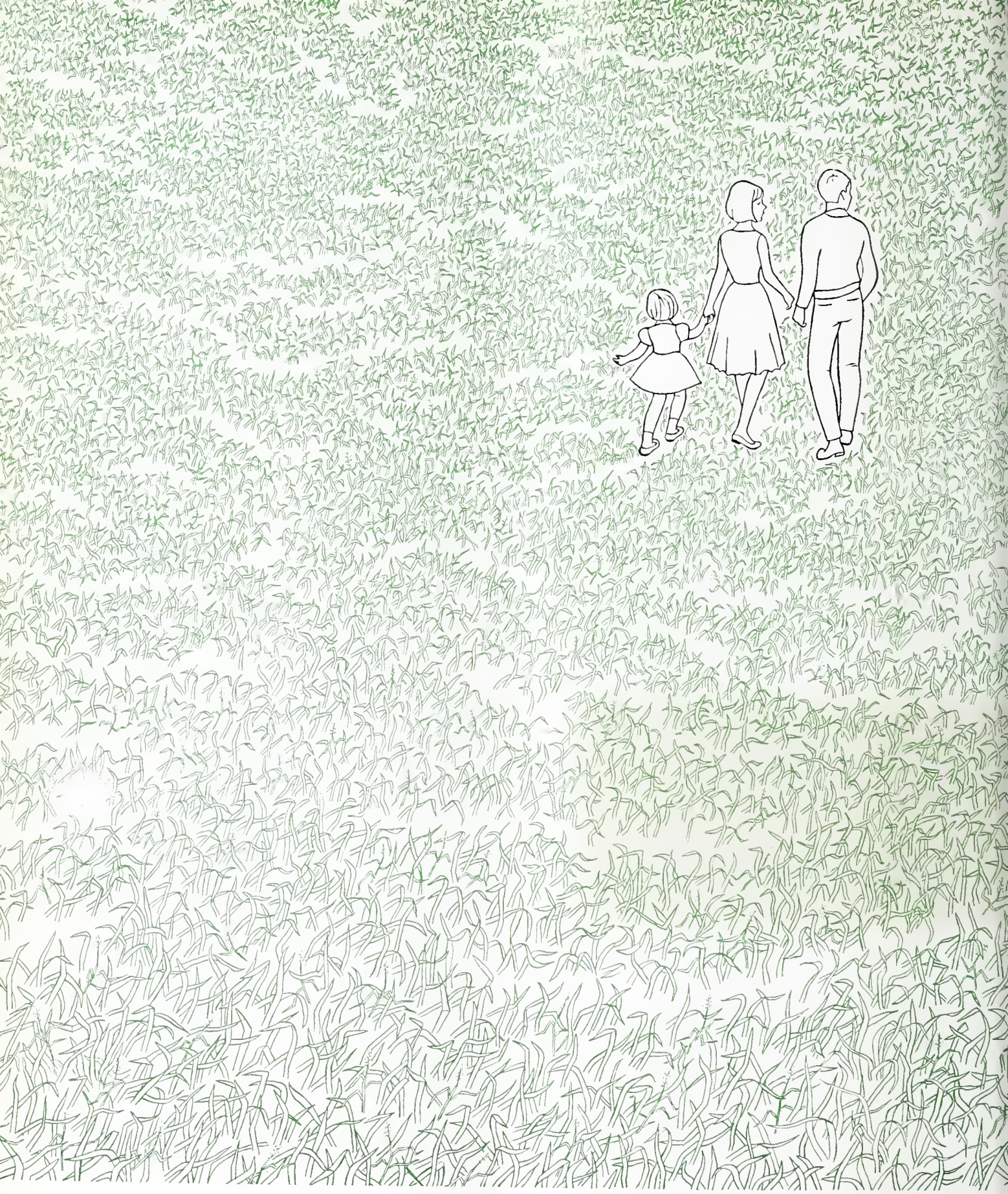
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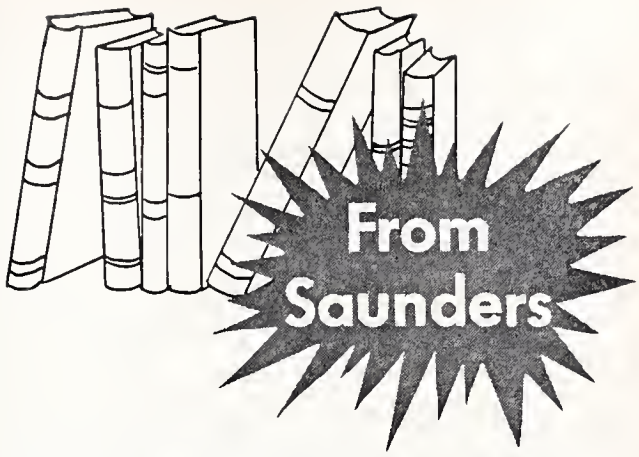
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Standards of Practice Governing the Relationship Between Lawyers and Physicians

PREAMBLE

Realizing that a substantial part of the practice of law and medicine is concerned with the problems of persons who are in need of the combined services of a lawyer, physician and hospital; and that the public interest and individual problems in these circumstances are best served by the cooperative efforts of all concerned; we, the members of the Arkansas Bar Association and the Arkansas Medical Society, do adopt and recommend the following declaration of principles as standards of proper conduct for lawyers, physicians and others concerned, subject always to rules of law and standards of legal and medical ethics prescribed for their individual conduct.

A. With Respect to Reports to be Furnished.

1. Where a report is requested by the patient's attorney, supported by proper written authorization from the patient, and where the report is to be based on information which the physician can obtain from his own office records, he should furnish a report with or without reasonable charge at the discretion of the parties involved. And similarly, where the requested report would require an additional examination of the patient, or would require that the physician check hospital records, a charge should be made in an amount to be agreed upon between the physician and the patient.

2. Where the report is requested by someone other than the plaintiff, or the plaintiff's attorney, the physician should insist upon proper authorization from the patient before giving the information or the report, and his charge for such report should be in an amount to be agreed upon between him and the person seeking that report.

3. When a report is requested, the lawyer should make clear in his written request for a report the specific condition about which he seeks information, and should likewise indicate whether or not he is asking for a prognosis. The physician, upon receipt of such request, should answer such request and furnish such report promptly.

B. With Respect to Physician Being Called to Testify or to Render a Deposition as Witnesses.

1. The relation between a lawyer and a physician should be based upon mutual courtesy and understanding. A physician should understand that medical testimony is frequently indispensable to prove or disprove the nature and extent of injuries. Therefore, where he undertakes to treat a person who has been injured, he has an incidental responsibility to cooperate with the patient and his attorney if litigation ensues for recovery of damages for the injuries so sustained.

2. It is understood that the fee charged by the physician for his medical services does not take into account any further time or effort on his part in the event of such litigation, and therefore these standards recognize that it is right and proper that the physician should be further compensated for any additional time or effort expended by him in such litigation.

3. A physician should attend court at the time appointed. The lawyer should appreciate, however, that a physician has continuing and often unpredictable responsibilities to his patients. In so far as he is able, the lawyer should make arrangements to permit the physician to testify with a minimum of inconvenience and delay to him.

4. It is recognized that in most instances it is proper that a conference should be held between the physician and lawyer proposing to call him as a witness, at some mutually convenient time before he is to testify.

*Approved by the Arkansas Bar Association and the Arkansas Medical Society.

5. No physician should be subpoenaed as a witness to testify in any case without prior conference with the lawyer calling him, concerning the matters as to which he is to be interrogated, unless both the physician and the lawyer agree that such conference is unnecessary.

6. It is recognized that whether a consultation fee is to be charged to the patient for such conference, and if so, the amount of such fee, should in all cases, depend upon the circumstances pertaining to each case, including the physician's time required in such conference, the extent of his previous services for the patient, and the ability of the patient to pay for such services. Therefore, the amount of the fee, if any, should be a matter of agreement between the physician, lawyer and patient.

7. It is recognized that, although every reasonable effort should be made to minimize the inconvenience to the physician witness, the dispatch of the duties of the courts cannot be governed by the convenience of litigants, lawyers or witnesses, whoever they may be.

8. In so far as it is in their power to do so, however, lawyers should make such advance arrangements for the attendance of physicians as witnesses, as will have due regard for the professional demands upon the physician's time, including preparation of medical evidence. Such advance arrangements contemplate some reasonable notice to the physician of the intention to call him as a witness, prior to the issuance of the subpoena, and calling him by phone after the trial has commenced and advising him of the approximate time when he will be called to testify.

9. When a physician is called to testify as a witness for his patient, the charge, if any, to be made to such patient, shall be the equivalent of what the charge would be to such patient for the same amount of time and skill for professional service.

10. When a physician is called to testify as an expert witness, he shall be paid such fee as is agreed upon with the lawyer representing the party calling him.

11. No arrangement shall be made whereby the amount of the physician's charge for his time as a witness shall be determined by the amount of the recovery by the patient in the litigation. Nothing herein is intended to alter the rules of law with reference to attendance of witnesses and fees for their attendance, nor the law with reference to privileged communication.

12. The relationship between lawyer and a physician should be based upon mutual courtesy and understanding; they should conduct themselves towards one another in the courtroom with dignity and respect.

13. Consideration and Disposition of Complaints. The public airing of any complaint or criticism by a member of one profession against the other profession or any of its members is to be deplored. Such complaints or criticism, including complaints of the violation of the principles of this Code, should be referred by the complaining doctor or lawyer through his own association to the appropriate association of the other profession; and all such complaints or criticism should be promptly and adequately processed by the association receiving them.

14. The physician should testify solely as to the medical facts in the case and should frankly state his medical opinion. The role of the physician witness is to interpret medical facts in lay terms to the judge and jury without regard to what legal conclusions may be drawn from such testimony. He should never be an advocate and should realize that his testimony is intended to enlighten rather than to impress or prejudice the court or jury.

15. Established rules of evidence afford ample opportunity to test the qualifications, competence, or credibility of a medical witness; it is always improper and unnecessary to embarrass or harass a medical witness without just cause.

C. With Respect to Physician's Fees and Services.

1. It is fully understood that under no circumstances should the physician's charges, or his fees as a witness, be contingent upon the success of the patient's litigation.

2. When the physician has not been fully paid by the patient, either for his regular professional services or for his time as a witness, or both, the lawyer shall request permission of the patient to pay the physician for such services, out of any recovery of money which the lawyer may receive on behalf of such patient.

Headaches

Ted Clemens, Jr., M.D.*

Pain has been one of man's major concerns throughout history. Yet, pain was not demonstrated to be a specific sense or sensation until the latter half of the 19th century. Pain originating about the head or face has been termed cephalalgia or just plain headache. Its severity ranges from a dull aching sensation to one of the most intense pains experienced by man.

Headaches may be divided conveniently into two large categories depending on whether they arise from stimulation of intracranial tissues or occur as a result of stimulation of those which are extracranial.

Intracranial Causes of Headaches

Headaches having their source from intracranial structures result from: 1) traction on the large arteries at the base of the brain and their branches; 2) traction on the middle meningeal artery; 3) distention and dilatation of intracranial arteries; 4) traction on the veins that pass to the venous sinuses from the surface of the brain and displacement of the great venous sinuses; 5) direct pressure by tumors on the cranial and cervical nerves containing afferent pain fibers from the head (Cranial nerves V, VII, IX and X; and 1st, 2nd and 3rd cervical); 6) inflammation in or about any of the pain-sensitive structures of the head.

The skull bone or cranium, brain parenchyma and most of the dura are not pain sensitive. Neither are the choroid plexuses, most of the pia arachnoid and the ependymal lining of the ventricles. If a pain-sensitive intracranial structure on or above the superior surface of the tentorium cerebelli is stimulated, pain will be perceived in front of a line drawn vertically from the ears across the top of the head. The fifth cranial nerve contains the pathways for this pain. If a pain-sensitive intracranial structure on or below the inferior surface of the tentorium cerebelli is stimulated, pain will be perceived in various regions behind the above described line. The IX and X cranial nerves and the first three cervical nerves contain these pathways.

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Extracranial Causes of Headaches

Headache resulting from structures outside the skull is perceived largely at the site of stimulation. Most all structures on the surface of the head—skin, fascia, muscles and extracranial arteries—are pain-sensitive. The foregoing are general considerations of pain arising from the head. Specific types of headaches may be considered now.

Brain Tumor

The headache of a brain tumor is usually deep, aching, dull and steady as contrasted to throbbing or rhythmic. The vast majority are intermittent and are usually more intense in the early morning hours. The pain is produced by traction on the large arteries, veins, venous sinuses, and certain cranial nerves. Increased intracranial pressure, per se, is not the dominant factor in the production of pain as evidenced by the fact that it is as common in patients without increased intracranial pressure as in patients with increased pressure. Reduction of increased pressure, by itself, does not eliminate the pain of this type headache.

Febrile Illness

The headache of fever associated with acute infections, sepsis and bacteremia is secondary to the distention of intracranial arteries. It is similar to that induced by intravenous histamine injection and the common "hang-over" headache. The amplitude of pulsations of the cerebrospinal fluid is significantly increased. This is in direct contrast to the migraine headache in which there has been no convincing evidence of an increase in amplitude of cerebrospinal fluid pulsations.

Paracranial Structures

The headache associated with nasal and paranasal structures is of a deep, dull, aching and nonpulsatile quality. It is intensified by an increase in the engorgement of the mucosa from whatever cause. Inflammation and engorgement of the turbinates, ostia, nasofrontal sinus ducts, and superior nasal spaces are responsible for most of the pain from the nasal and paranasal structures.

The successful treatment of all the foregoing headaches depends on the physician's having ac-

curately diagnosed the precise mechanism causing the pain. The headache secondary to space occupying intracranial lesions, intracranial aneurysms, diseases of the nasal and paranasal structures, eyes, and teeth requires correction of the basic problem. The headache of a febrile illness disappears as that illness is successfully managed by God or man.

Migraine

The migraine headache is one of the most common headaches. It is periodic, usually unilateral in onset and is associated with nausea, vomiting, emotional irritability, diarrhea and photophobia. Pre-headache symptoms may include scotomata, hemianopia speech disorders and unilateral paresthesia. Thus, the migraine complex is a physiogenic syndrome with widespread bodily disturbances and with manifestations within the central nervous system of both painful and nonpainful nature. Initially, local vasoconstriction of a cerebral artery occurs producing the visual and other nonpainful sensory symptoms. It appears that in most instances the cause of the visual defect occurs within the cranial cavity rather than in the retina or orbit. Following this prodrome, a throbbing headache begins. The source of pain is distention of the extracranial arteries, chiefly branches of the external carotid artery. Clearly, a minor source of pain is distention of the intracranial arteries at the base of the brain. The pain can be reduced appreciably by pressure on the common carotid artery. After several hours of sustained vasodilatation edema of the arterial wall and surrounding tissue occurs. The pain may now become a steady ache and the artery becomes tender to palpation. There are characteristics of the individual which may lead one to suspect the migraine syndrome. Most migrainous persons are inflexible, conscientious, perfectionistic, meticulous individuals who are hard working and who set high personal standards. They are capable of sustained high-output mental and physical activity. During such states a chain of events occurs which sets off the vasomotor crisis characteristic of the migraine syndrome.

The successful treatment of recurrent, severe migraine headaches must be approached in a two-fold manner. Ergotamine tartrate will effect prompt vasoconstriction if given early in the course of the headache. Prevention of the headaches may be effected by modification of stressful factors in the environment and emotional life of the patient. Obviously, the threatening factors cannot always be avoided, but, frequently the patient can be helped to learn to deal with them constructively.

Hypertension

Headaches associated with hypertension have essentially the same pathophysiology as the migraine headache. There is no relationship between the level of the blood pressure and the frequency or severity of the headache. The "hypertensive headache" is due to distention and dilatation of the arteries at the base of the brain and/or the branches of the external carotid artery.

Tension Headaches

The muscles of the head and neck are one of the most frequent sources of headache. Pain and tightness in the back of the head and neck are frequent complaints. Such sensations as a tight band, a drawing, an aching, a weight or vise-like feeling are described. The patient may describe pain or paresthesia over the vertex of the head. One usually finds tenderness throughout the trapezius muscles especially along the top of the shoulders and upper neck. This type of headache is secondary to prolonged and sustained contraction of skeletal muscles. It is found in emotionally tense, frustrated and often aggressive individuals. Experimental studies also show that an unpleasant sensation or pain in any part of the head may lead to sustained contraction of the muscles of the head and neck. Thus, the headache of brain tumors or the migraine headache may cause secondary, sustained contractions of skeletal muscles and a resulting muscle tension headache.

Muscle tension headaches are relieved by heat and massage of the affected muscles and by analgesics. Occasionally, head traction is needed. Con-

structively dealing with known tensions is the effective prophylactic approach.

In summary, the majority of headaches result from reversible tissue changes—from distention of cranial vessels and from sustained contraction of skeletal muscles. A small percentage of headaches result from traction, displacement and inflammation of pain-sensitive structures inside the head. In addition, another small proportion of head pain results from inflammation of the nasal and paranasal cavities, teeth, ears and eyes.



Medical Education Foundation for Arkansas

During 1963, the Medical Education Foundation for Arkansas purchased five microscopes to be rented to medical students unable to purchase the instruments. Each microscope bears a plate in memory of Dr. Fount Richardson, who was instrumental in establishing the Foundation.

Dean Shorey of the Medical Center advises that this has been a most worthwhile use of money available through the Foundation, and the Board of Trustees anticipates that additional microscopes will be purchased as soon after the beginning of the Fall term as the needs are ascertained.

Dr. Robert Watson, Chairman of the Foundation, is anxious to receive contributions. Checks should be made payable to the "Medical Education Foundation for Arkansas" and mailed to either Dr. Watson or the Arkansas Medical Society office in Fort Smith.



An Automatic Pressure Controlled Coronary Perfusion System, Including Physiological Observations Derived From Its Application in the Human

—L. H. Bosher, Jr. (Medical College Hosp, Richmond, Va) *Arch Surg* 88:752 (May) 1964

In an attempt to solve the complexity of coronary perfusion, a coronary perfusion system was engineered which combines safety and flexibility, while automatically adjusting the flow rates in response to alterations in coronary vascular resistance. Additional advantages of the system are a low priming volume, protection against excessive line pressure, relative safeguard against air embolism, individual coronary artery flow and pressure control, and immediate recognition of obstructed cannulas. The apparatus has now performed satisfactorily in more than 20 operations for a variety of conditions involving the aortic root or valve. Observations in recent cases have permitted certain conclusions on the proportionality of flow between, the right and left coronary arteries, the effect of temperature on coronary artery flow, and the effect of myocardial ischemia on coronary flow, including the duration of ischemia in relation to the recovery period. Experimental studies and clinical observations involving the principle of autoregulation have been outlined.

Preventive Measures for Marital Adjustment

Annual Institute of Psychiatry and Neurology

Lena Levine, M.D.*

Little Rock, Arkansas — February 28, 1964

After almost 20 years of practice in the diagnosis and treatment of marital problems, my impression (it can only be an impression because follow-up is difficult — there is little or no response to follow up letters) of the success in the treatment of marital ills can be compared to the success in the treatment of cancer. Many years ago physicians usually saw cancer cases when they were in an incurable and inoperable stage. A great campaign of prevention through public education and propaganda changed the doctor's sense of hopelessness to satisfaction in their ability to prolong the life of many and cure some of the cases.

Men and women come for help for their marital problems when there has been a serious disruption of the relationship, with one or the other or both incapable of or unwilling to make the effort to do what they need to do to make it a satisfying relationship. Cure of marital ills (a satisfying relationship) is low—and so like in cancer, I propose to tell you how they can be prevented.

The answer to the difficulties of this most complex dynamic relationship is preparation for marriage, parenthood and family life—a continuous process in the life of an individual.

It implies a child planned for and wanted by the two young married people who have by working out their own relationship, created a healthy environment for the child to live in and an example for the child's own future marriage and family life.

It implies knowledge of modern concepts of child rearing, to give a child not only physical and intellectual opportunities for growth, but also emotional growth to maturity. It implies education in the schools in recreational areas, in places of worship, to reinforce and add to the precepts and concepts inculcated in the home.

Education for marriage is a continuous process in the cycle of development from childhood to adulthood, but at crucial periods it will be necessary to have a review of facts and attitudes regarding the phase of development to be entered into and more information and guidance given.

Sex education is part of this education. In all parts of the world when men and women are relieved of the intense preoccupation and anxiety about obtaining sustenance, their concern turns to their relationship with their family and they desire the knowledge necessary to be happy as husband and wife, and as parents.

A major need at first is knowledge of an area which they themselves recognize as significant in their relationship, namely sexual relations, and reproduction, about which there is still more ignorance, misinformation, superstition and taboo than any other aspect of human relationship. Then they are ready for knowledge and guidance in the other areas of marriage and parenthood.

The most crucial area of education is the premarital education before a family begins. This can be pastoral counseling for the believers, but for all there must be the premarital consultation with the physician. This, for the doctor, is an extension of preventive medicine to the family unit. A medical examination and discussion for marriage may prove of great value in contributing to a successful marriage and in preventing potential discord and unhappiness. The need for some form of medical examination before marriage has been recognized, and laws making examinations compulsory have been primarily eugenic in character, the primary aim to prevent the marriage of individuals affected with transmissible or hereditary diseases particularly venereal. Most of the states in our country require an applicant for a marriage license to present a medical certificate declaring that he or she is free from all venereal diseases. But physicians are slowly recognizing the opportunity this visit by a young couple for them not only to prove that they are free of venereal disease but do what he can to give knowledge, allay existing conscious fears and anxieties from lack of knowledge, misinformation, taboos and superstitions still existing among a large segment of our population

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particularly in the area of sex and reproduction.

Others and this audience particularly need to contribute their skill to educate young people about to marry in the concepts of interpersonal relationships. There is a great unanswered need in the community for lectures and discussion on marriage. I would suggest that those interested in mental health would do a great prevention service if they answered their requests. Fraternal, welfare organizations, PTA's, recreational church, temple groups send me requests for speakers on various aspects of marriage and many go unanswered for few are qualified or interested in this area.

Readiness for marriage — This can be readily determined because marriage requires emotional maturity. It is too great a burden for the immature. Whether the one consulted can or can not succeed in avoiding a marriage of immature people, depends on whether the young couple is sent by the parents or came by themselves. Usually they come because of parental objection and under these circumstances resent having to come to another authority.

Proper choice—At present there are young people who come premaritally because of a problem in their relationship. These run the gamut of difficulties found in marriage. At present they even include sexual problems. On the basis of experience with marital maladjustments the problem area is focalized, clarified and the difficulties also pointed out. This helps in working out the problem after marriage, though the suggestion is always made to work it out before the marriage takes place. One frequently concludes in cases of marital difficulties that these two should never have married each other. Sociologists have contributed to this problem by publishing data as to what makes happy marriages. One psychologist devised tests to determine compatibility. "Univac" has been used by some professionals and as an entertainment gimmick. In some cultures parents still make the choices and the young men and women accept the wisdom of their choices. In our country choice is made on "love".

When young men and women at times come because of problems in their choice, they are helped to develop insight into the problem areas and then their choice can be a more reasonable one.

Serious research will be of great help as to how to educate young people in making a proper choice.

Stocktaking of Marriage — For the married couple especially, periodic stock-taking of their marriage will help maintain it on an even, happy course. The importance of this kind of review increased yearly because, at every stage of marriage, in the early years of adjustment and even in the middle years when people are supposed to be well settled, there is increasing dissatisfaction. This is particularly noticeable in the middle-class group, which had always been the bulwark of family stability. In other generations, men and women accepted and resigned themselves to poor marriage and unsatisfactory family life. Now, they resist the unhappiness a bad marriage brings with it; they want to break away and form a new relationship. The external forces which previously seemed to maintain marriage and family life are losing most of their effectiveness; law, religious and social pressures, effective in the past, are no longer enough to hold a family together if its members are unhappy. The present divorce rate shows how completely legal restrictions and religious sanctions have failed to maintain the stability of family life. Men and women can now separate without fear of retaliation from society or of losing status within the family group. To keep the situation from deteriorating further, men and women must develop and grow to be able to accomplish their tasks as husband, wife, and parents. They must adjust themselves constantly to the changes that marriage and family life bring. Taking stock of marriage is offered as a preventive measure from the past. Men and women can sift out what will be of value to them in the future, discard attitudes and ideas that no longer apply, and accept new ideas and attitudes that will be useful in the future. All this must be done systematically on the basis of their own needs and satisfactions, their relationships with husband, children, friends, families and community and their work, whether it is housework or work outside of the home. Out of this painstaking examination comes understanding of what is old and should be discarded, what is still good and must be kept. New facts, ideas and attitudes can be fitted into the solid and lasting framework on which the next phase of family life will be built. Stock taking

was an experiment done with groups of well adjusted couples and I would like to discuss the details of some of their experiences.

Such a process of "taking stock" could review some of the major adjustments required by family living, problems currently of concern to the participants, and the strengthening of values implicit in good family living. Everyone, in business or family life, normally takes stock of present circumstances so as to be able to plan ahead. The use of this familiar concept had appeal in attracting and motivating participants for group stock-taking. I would like to describe highlights of a complete session of several groups of stock taking.

The last session—This session was used to some extent for evaluation of the discussion series. Every member of the group indicated in some way how the discussions had had positive values. For several, one outstanding value was a sense of greater ease or freedom in the marital relationship. The feeling about their experience as a group was especially positive. The participants felt they were a "chosen" group, in a sense privileged to have had this experience. They sought to perpetuate themselves as a group by offering to act as a planning and organizing body for similar discussion groups in the neighborhood centers.

Subject Areas—The following topics proved of major concern to the group: sexual attitudes, behavior, and differences as between husband and wife; parental guidance of children; sharing with siblings the responsibility for aged parents; the number of children couples should plan to have.

Other problems of lesser concern to this group were: living with in-laws; the husband's inability or lack of desire to express sentiment on family "occasions"; differing recreational interests; problems of self assertion and temper; occupational adjustment.

While the group leader began with a plan for subjects that might be discussed at each session, she permitted the group to select those of concern to them and was responsive to the group's wishes in allotting time for discussion of each.

Although experience in using the conceptual framework of "Taking Stock of Marriage" was limited, it was found to be a helpful program device for use in small group discussions with normally adjusted married couples. Bringing husbands and wives together in the same group facilitates interactions that can produce meaningful learnings for the participants.

Like any other program technique in family life education, the process of "taking stock" has only as much value as a competent discussion leader can give it. This particular method can have greater value if participants are individually interviewed by the discussion leader prior to the first group meeting. Then the content of discussion can be planned even more meaningfully.

The selection of participants is of key importance to ensure their ability both to participate in, and contribute to, the group's discussion. Careful selectivity and the leader's skill in guiding discussion are important factors in limiting excessive disclosure of problems that cannot be dealt with constructively in a group setting.

With skilled leadership, "Taking Stock of Marriage" can be a significant evaluative process, and preventive of marital maladjustments.

Conclusion — I trust I have presented some aspects of prevention which will appeal to some of you, to see your participation in the program I have outlined. Cure is not too difficult to have people accept if facilities are available. Prevention is difficult and requires patience and fortitude, but the results attained will make it worthwhile. There is need for more professional interest in service, education and research in this most important of interpersonal relationships—marriage.



TEACHING SEMINAR

University of Arkansas Medical Center
Little Rock, Arkansas



DUODENAL ULCER

Implications of the Radiologist's Report

Robert D. Milledge, M.D.*

The search for a duodenal ulcer is one of the most common tasks assigned to the Radiologist by the referring physician. It is the purpose of this paper to present briefly the problem of diagnosis of duodenal ulcer from the viewpoint of the Radiologist, considering in order, the examination, the findings, and the progression of an ulcer. Only the uncomplicated peptic ulcer and the common complication of perforation will be considered.

The Examination

The upper gastrointestinal (GI) series consists of examining the esophagus, stomach and duodenum by fluoroscopy, fluoroscopic spot films, and standard x-ray films. When viewing the x-ray films it should be constantly kept in mind that one is not seeing the stomach or duodenum itself but is observing an opaque mold or cast of their lumen. A defect in the wall should fill with barium and thus form a projection away from the barium column within the lumen.

It should also be remembered that the films represent only a few isolated instants out of an examination lasting 5 to 10 minutes or more and that the stomach and duodenum are not static but constantly in motion. Fluoroscopy is indispensable in the upper GI examination, not only to appreciate this motion, but also to view these structures from many angles and thus obtain the best possible films for the demonstration of an ulcer.

Films taken in various positions and projections tend to show ulcer craters with varying degrees of accuracy. We feel however, that the most useful are the air contrast views and the prone oblique view made with the duodenal region compressed by an inflatable paddle inserted between the table and the patient.

The Findings

One and only one finding can be accepted as unequivocal proof of an ulcer, namely the radiographic demonstration of the crater. However, in the absence of a visible crater there are other findings which may be quite helpful in suggesting the diagnosis. These findings include tenderness, spasm, irritability, and deformity. It is possible for all of these to be present simultaneously, but this is unlikely as they tend to represent different phases in the natural history of the ulcer.

At this point it would be helpful to examine the terms which are applied to the various findings.

1. *Duodenal cap* or *duodenal bulb* is the cone shaped first portion of the duodenum (Fig. 1). It begins at the pylorus and extends about 3.5-5 cm. Approximately 95% of all duodenal ulcers occur in the cap.

2. *Crater,* radiographically speaking, refers to the demonstration of the ulcer itself by contrast material retained in its cavity. In a profile view the crater will be seen to protrude beyond the wall of the duodenum. When the crater is viewed face on, its demonstration is more difficult and is usually brought about by applying pressure to the duodenal cap to force adjacent barium away.

*Assistant Professor, Department of Radiology.

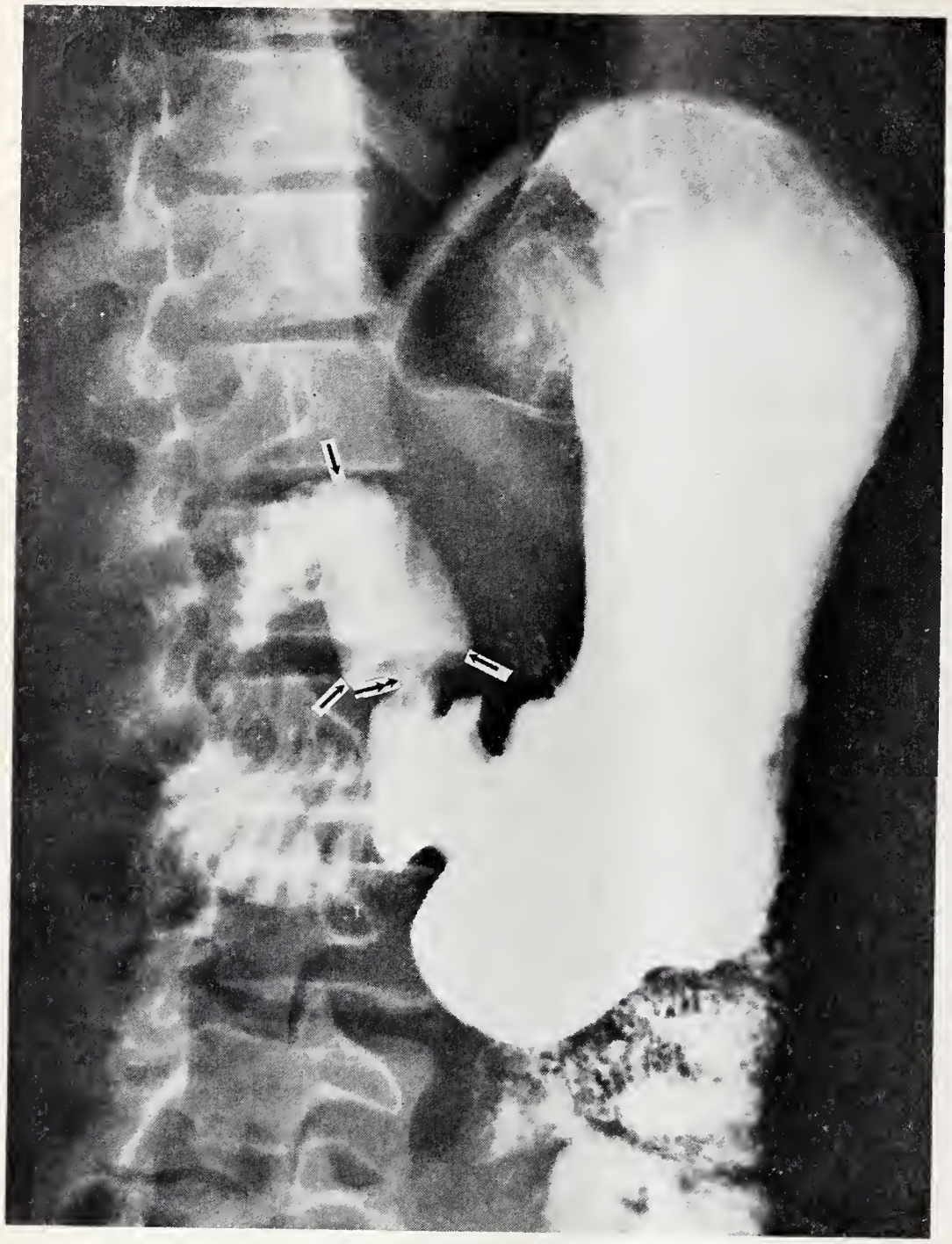


Figure 1. Normal Stomach and Duodenum: The arrows indicate the boundaries of the cone shaped duodenal cap. Double arrows point to the pylorus.

leaving the crater as the only area of retained barium.

3. *Irritability* means that the duodenal cap is constantly contracting and expelling its contents at a rapid rate, usually before complete filling.

4. *Tenderness* refers to pain elicited by palpation of the cap by the fluoroscopist.

5. Spasm indicates a prolonged contraction of all or a portion of the duodenal cap. Spasm may mimic deformity but if observed long enough the shape of the cap will change, even though a perfectly normal configuration may not be seen at any time.

A duodenal cap containing an ulcer frequently shows spasm, irritability, and tenderness; however, these findings need not be present, particularly if the patient has received partial treatment for his ulcer. Conversely spasm, irritability and tenderness may be present in the absence of an ulcer. For example, these features may be secondary to inflammation of the gallbladder or other neighboring structures.

6. Deformity connotes permanent alteration in the contour of the duodenal cap by scarring. Classically, healing of a central ulcer will draw the walls of the cap in to form the socalled "clover-leaf" deformity. The out-pouchings thus produced are called *pseudo*diverticula (because

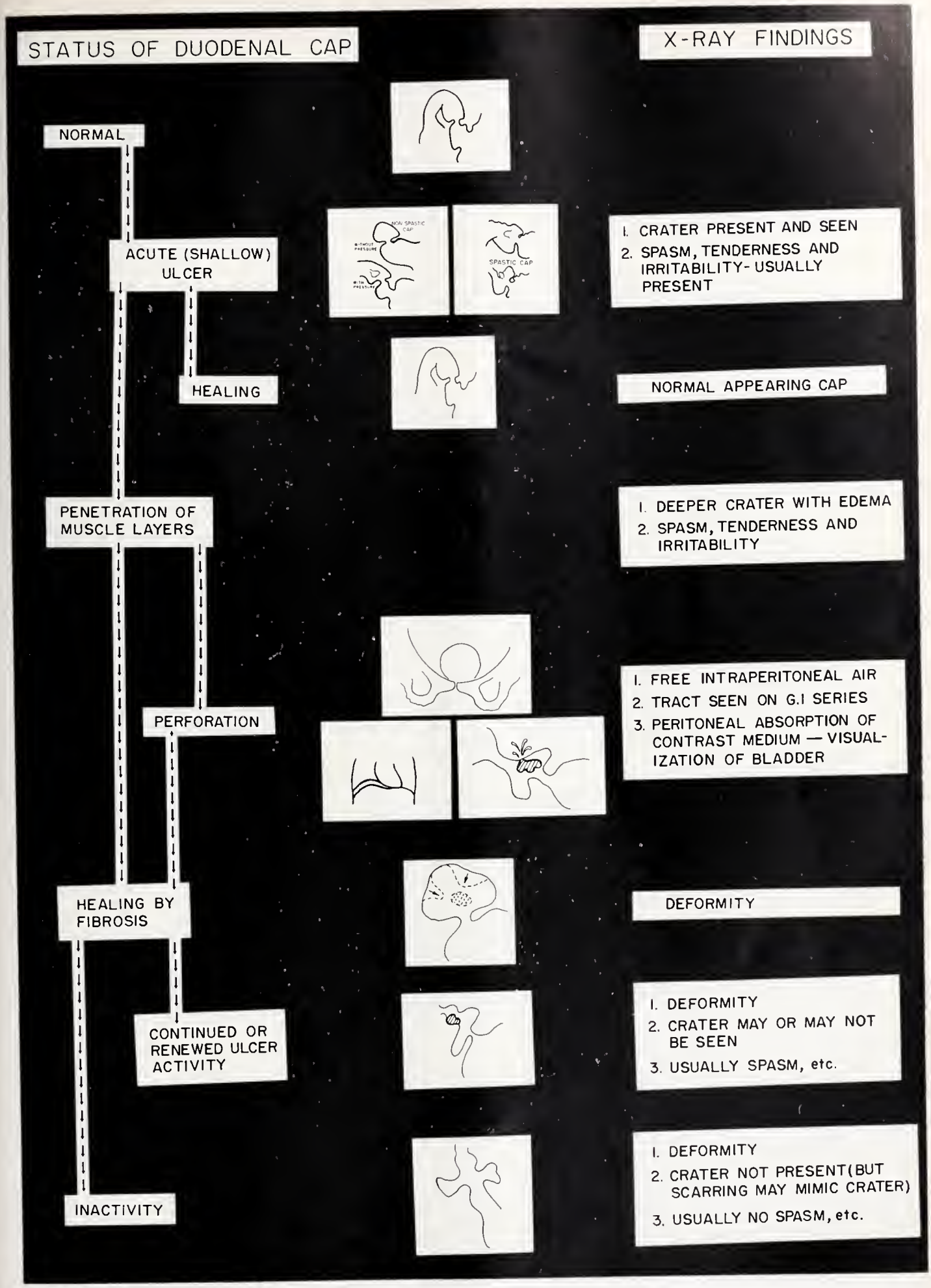


Figure 2. Chart illustrating the various paths along which a duodenal ulcer may progress. The line drawings are taken from subsequent figures.

they contain all layers of the wall rather than only mucosa as in true diverticula). These pseudodiverticula may resemble a crater and lead to false diagnosis of active ulcer.

In addition to old ulcer disease, apparent deformity of the duodenal cap can be produced by adhesions passing over the first portion of the duodenum. Deformity may also be produced when a perforated duodenal ulcer is repaired surgically.

The Progression of the Ulcer

Let us follow the progression of a typical ulcer (Fig. 2). The acute peptic ulcer is an erosion in the layers of the duodenal wall extending for a variable depth. The barium filled crater should be demonstrated almost all of the time if proper views are taken (Fig. 3). Scarring has not developed and there is, therefore, no permanent deformity. However, spasm will commonly cause a changing appearance of the cap (Fig. 4).

An acute ulcer may follow one of two paths in its progression. If the acute ulcer remains superficial there may be healing with no scarring and therefore no deformity. Subsequent examinations will show no evidence that an ulcer has ever been present. If, on the other hand, the ulcer has penetrated the muscle layers, subsequent healing will be by fibrosis, leading to a scarred or deformed duodenal cap (Fig. 5). (Perforation is a complication of deep penetration and will be discussed separately.)

The patient with such a scarred or deformed duodenal cap may have no further difficulties, but it is quite likely that reactivation of an old ulcer or formation of a new ulcer will occur. As in the case of the acute ulcer, absolute diagno-

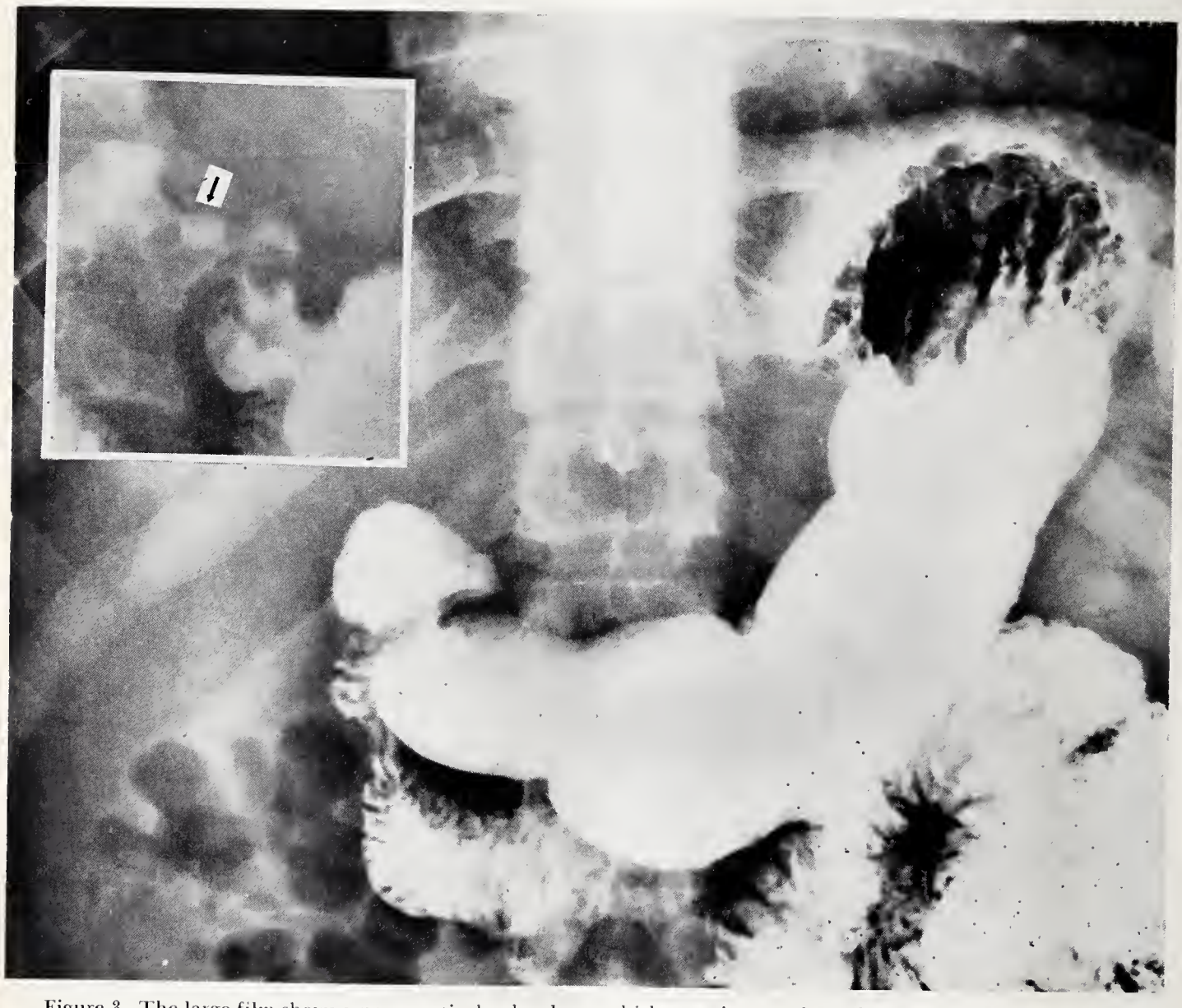


Figure 3. The large film shows a non-spastic duodenal cap which contains an ulcer; the crater is obscured by barium within the cap. The insert is a film taken with compression of the cap; excess barium has been pushed away uncovering the crater.

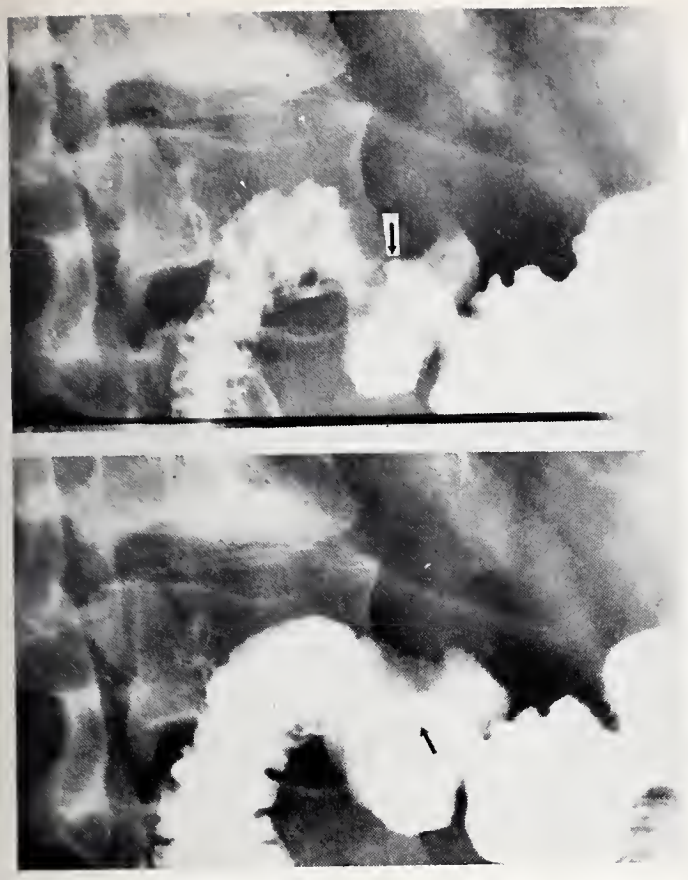


Figure 4. Acute Ulcer in a Spastic Cap: The arrows indicate the ulcer. The two films were taken within a few seconds. The changing appearance of the cap is due to spasm.

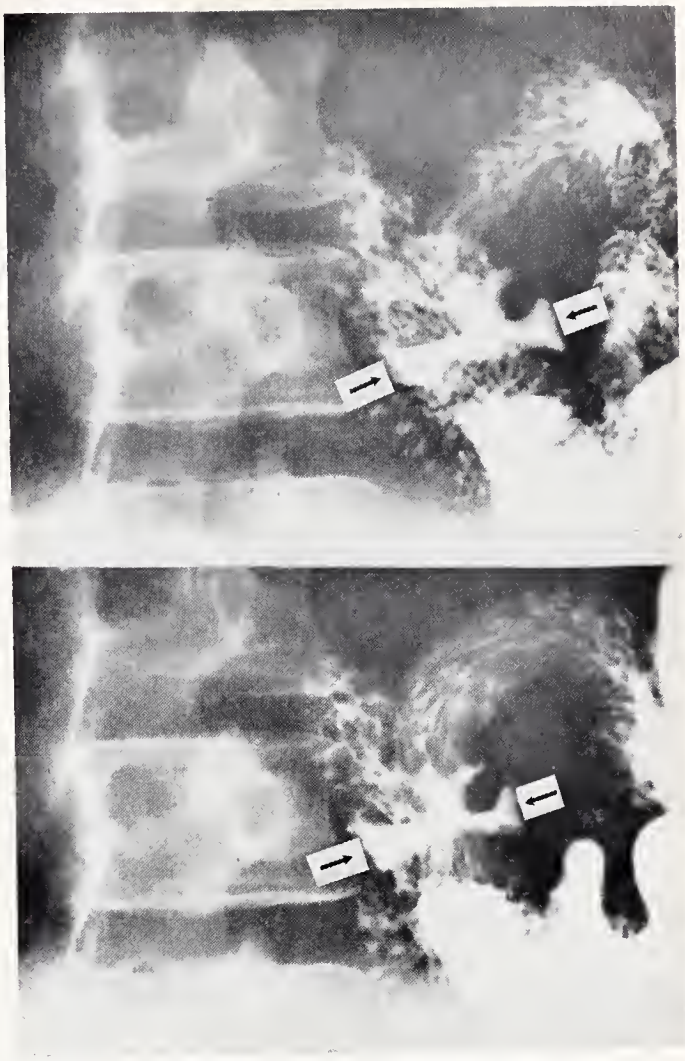


Figure 5. Scarred Cap without Crater: Sequential films show no change in this deformed duodenal cap from moment to moment. The arrows indicate pseudodiverticula.

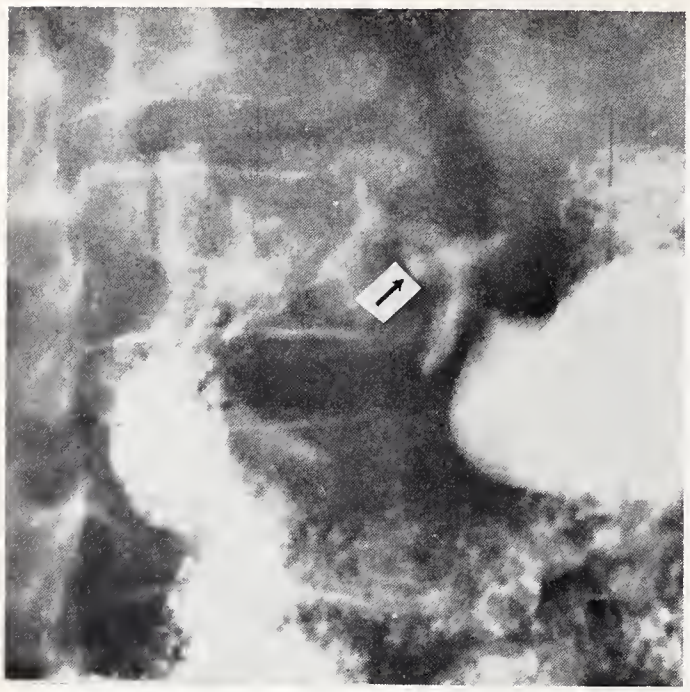
sis of active peptic ulcer depends upon the demonstration of the crater (Fig. 6). When scarring is present, accuracy in demonstrating an ulcer decreases by about one half. The radiographic findings in a patient with only a deformed duodenal cap may well be identical to those in a patient with a chronic, but active, peptic ulcer in which we are unable to demonstrate the crater. Here we must depend far more heavily on the clinical data and secondary signs than in the case of the acute ulcer.

The Perforated Ulcer

Typically the mention of perforated duodenal ulcer brings to mind the thought of "air under the diaphragm" and indeed the most common single radiographic sign of acute perforated ulcer is free air in the peritoneal cavity. Without question the one best all around film to obtain in a suspected case is an upright PA film chest. This examination, for a number of technical reasons, is more likely to demonstrate free subdiaphragmatic air than is the upright abdominal film (Fig. 7). In addition, the chest film provides information as to the status of the heart and lungs—always an important consideration in a patient who may be operated upon. If it is impossible to obtain an upright film, one should be made with the patient lying on his left side and with the x-ray beam directed horizontally. This position will cause free gas to rise to the right side of the abdomen between the right lobe of the liver and the abdominal wall.

It is very important to remember that some patients with perforated ulcers do not show free intraperitoneal air on any x-ray studies. It has been found that emergency upper GI series may demonstrate the tract of a perforation in many patients with perforated ulcers, including *some of those who do not show free air*. This examination should be done with a water soluble contrast medium such as diatrizoate (Hypaque) rather than barium to avoid contamination of the peritoneal cavity.

A bonus benefit of the upper GI examination using water soluble media is due to the fact while these media are not absorbed appreciably from



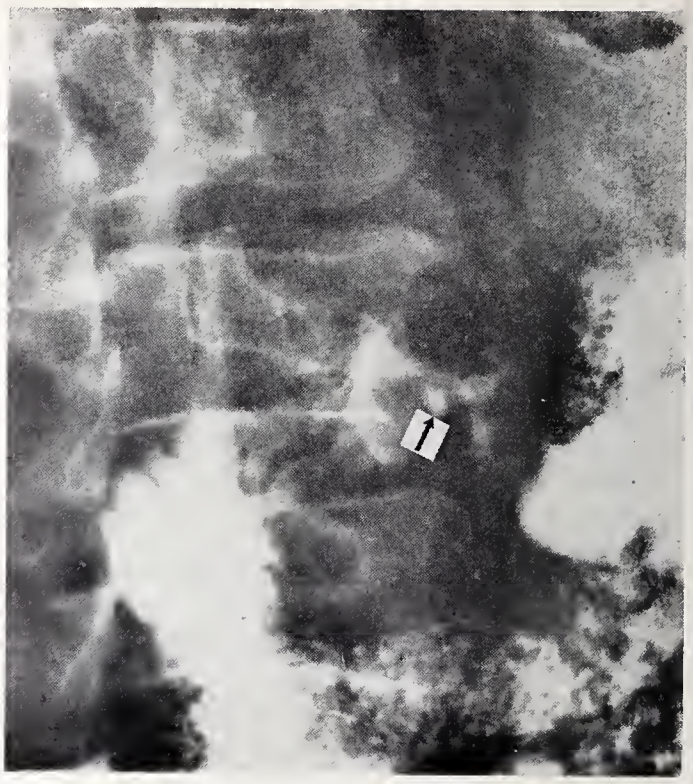


Figure 6. Scarred Cap with Crater: An ulcer crater is present (arrow) on the inferior surface of this deformed duodenal cap. The other protrusions are pseudodiverticula.

the GI tract they are absorbed by the peritoneal surface. Thus, if the contrast agent escapes from the GI tract through the perforation it will be absorbed by the peritoneum, excreted by the kidneys, and the bladder should show up as a faint density on a subsequent KUB film.

Summary

The x-ray examination of the upper gastrointestinal tract is briefly described. The various findings of duodenal ulcer are illustrated and terminology emphasized.

The crater should be found in almost all cases of acute duodenal ulcer. The hallmark of chronic ulcer disease is a scarred and deformed duodenal cap. It is difficult to distinguish by x-ray examination the scarred cap containing a crater from the scarred cap which does not. Therefore, in chronic ulcer disease more reliance must be placed on clinical findings.

When perforated ulcer is suspected an upright chest film or a left lateral decubitus abdominal film should be obtained. The use of water sol-



Figure 7. Free Air: The chest film shows a thin line of air beneath the right hemidiaphragm (double arrow). A smaller amount of air is seen on the left (arrow).

able contrast media in the diagnosis of perforated ulcer is also discussed.

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Pathogenesis of Chronic Pyelonephritis. Studies of Non-obstructive Pyelonephritis in the Rat

—A. M. Breslau, H. C. Gonick (VA Hosp, Los Angeles) *Amer J Path* 44:679 (May) 1964

Rats with pyelonephritis produced by a single intravenous injection of *Streptococcus faecalis* were studied histologically and histochemically at intervals from 1 hour to 105 weeks after infection, to investigate the pathogenesis of chronic pyelonephritis. The characteristically progressive pathological changes began in the renal pyramids with edema and septic infarction necrosis, and later inflammation extended to involve segments of the cortex. The renal medullary, tubular, and connective tissues, and subsequently the cortex, showed histochemical evidence of injury and repair, while the collecting tubules developed local reactive hypertrophy and epithelial hyperplasia associated with marked dilatation. Damage to the convoluted tubules was ineffectively repaired, and the distal convolutions suffered more than the proximal convoluted segments. Progressive atrophy of the renal parenchyma characterized the later stages of this type of chronic pyelonephritis. Two phases of ischemic injury were observed: first, that due to a compromised venous drainage secondary to medullary inflammation, which lasted from 3 days to 24 weeks after infection; and second, degeneration secondary to progressive interstitial fibrosis, which occurred from about 24 to 105 weeks.

Lung Cancer: Detection by Electrical Skin Resistance Method

J. F. Fries and C. P. Richter (Johns Hopkins Hosp, Baltimore) *Arch Intern Med* 113:624 (May) 1964

Existence of abnormal patterns of high and low electrical skin resistance in a high proportion of tumors of the lung is reported. Many of these patterns result from lesions of the sympathetic ganglia in the cervical and upper thoracic regions, either from pressure or invasion. Others may be due to sympathetic hyperactivity referred to the dermatomes representing the lungs and bronchi; still others are caused by peripheral nerve lesions. Some remaining bizarre patterns are presently unexplainable and nonspecific. A concept of a broader and often subclinical Horner's syndrome, detectable only by measurements of skin resistance, is set forth. Possible practical applications of the method in diagnosis are discussed. Advantages cited include speed, cost, paucity of false positives, superiority with certain tumor types, and lack of discomfort to the patient.

Influence of Five Hydroxytryptamine on Cerebral Circulation

R. L. Swank (3181 SW Sam Jackson Park Rd, Portland, Ore) and W. Hissen, *Arch Neurol* 10:468 (May) 1964

Injections of small doses of 5 hydroxytryptamine (serotonin) into the arterial circulation of a hind limb of the dog caused a marked reduction in the blood flow to the limb. When the same doses of serotonin were injected into the arterial circulation of the brain, the blood flow to the brain increased. Repeated injections of serotonin into a carotid artery were followed by an increase in the permeability of the blood brain barrier to trypan blue. It is suggested that the changes in flow and permeability of the cerebral vascular system were because of an intravascular aggregation of blood cells by serotonin.

ELECTROCARDIOGRAM OF THE MONTH

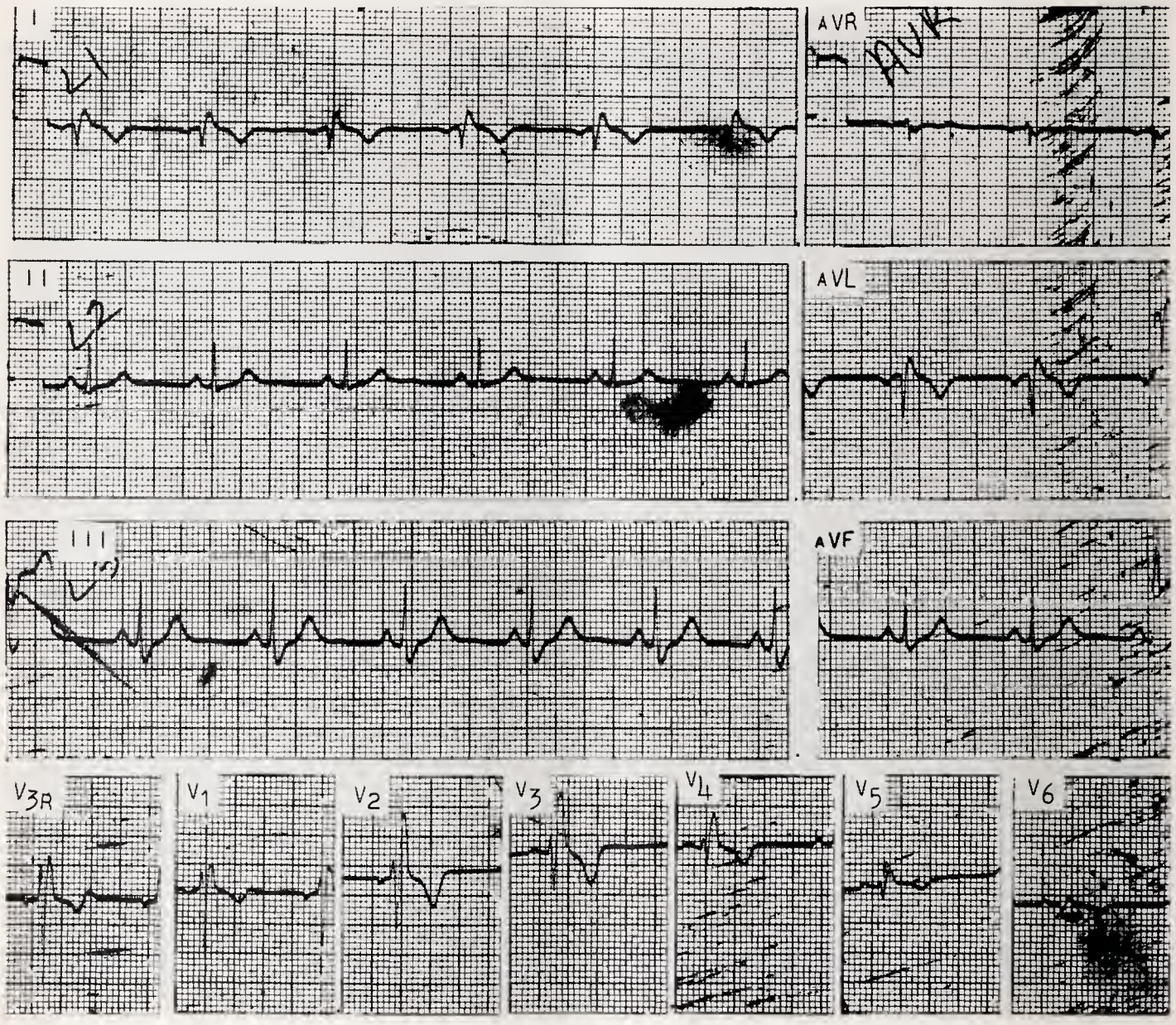
WHAT IS YOUR INTERPRETATION?

AGE: 39 SEX: M BUILD: MEDIUM BLOOD PRESSURE: Not Recorded

CARDIAC DIAGNOSIS: Asymptomatic—Situs inversus(?)

OTHER DIAGNOSES:
MEDICATION:
HISTORY:

ANSWER ON PAGE 87



The Department of Medicine, University of Arkansas Medical Center
*James S. Taylor, M.D., Professor of Medicine

WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

ANSWER ON PAGE 87



History: No. 17-60-11

There was intermittent abdominal cramping with occasional rectal bleeding for 6 months prior to this examination. The blood was bright red and usually found on the outside of the stools. Some blood was passed after each defacation.



PUBLIC HEALTH AT A GLANCE

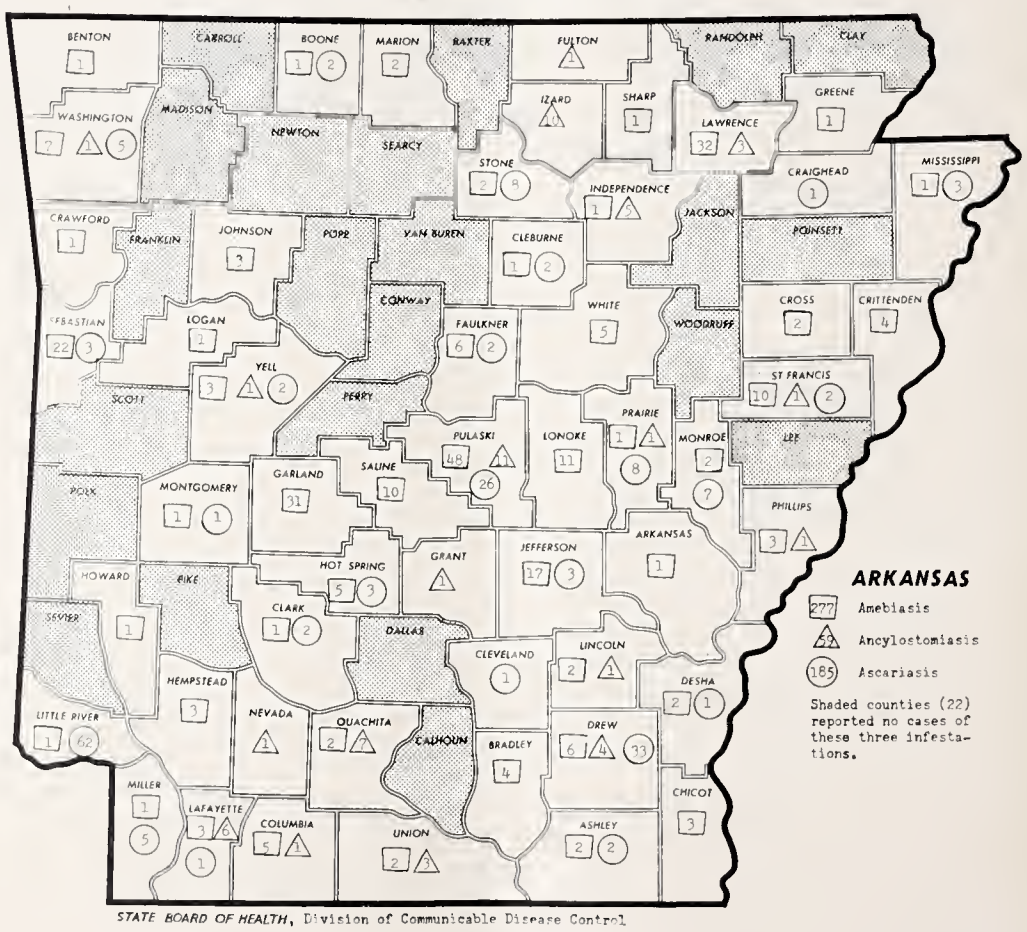
Intestinal Parasites

A 10-year survey of intestinal parasitic diseases that are reportable by number only suggests that, if the community is to have the full benefits from public health practices, more complete reporting including name and address will be necessary. All too often we take it for granted that indoor toilets automatically guarantee improved sanitation in the family and community, yet bacterial and viral indices of fecal contamination abound with excuses by the unfortunate victims, whereas the intestinal parasites' life cycles in relation to the individuals in the community is more acceptable to the public as prima facie evidence of a break in sanitary practices.

A most noticeable fact is that when the cases of amebiasis, ancylostomiasis, and ascariasis reported by physicians of Arkansas are placed geographically, the shaded counties of the accompanying map have had no cases of these three conditions reported during the 10-year period. In view of the likelihood of encountering at least one of these conditions during the 10-year period, underreporting is a much more plausible explanation than that these counties have reached the acme of sanitation.

The rarity of the beef and pork tapeworms

REPORTED CASES OF INTESTINAL PARASITES, 1954-1963
Reporting Required by Rules and Regulations



STATE BOARD OF HEALTH, Division of Communicable Disease Control

(Tenia saginata and Tenia solium), as well as trichinosis (Trichinella spiralis), although the latter is not often diagnosed during the intestinal parasite stage in man, attests the cooperation of the veterinary profession and the meat industry. Their occurrence at all may be attributable to the consumption of raw or undercooked meat. No cases of fish tapeworm (Tenia lata or Diphyllobothrium latum) have been identified clinically or by laboratory examination, suggesting that the fish consumed in this area are well cooked. The occurrence of dwarf tapeworm (Hymenolepis nana) is an example of the impact of man upon his fellowman, particularly when the young of the species is involved and especially when no intermediate host is involved and direct fecal contamination is essential to perpetuation of this organism.

The preponderance of intestinal parasites identified by the laboratory but unaccompanied by official case reports emphasizes the tremendous underreporting of these conditions, especially when private laboratories are utilized.

The importance of beginning training in sanitary practices in the home, school, and church at an early date in the youngster's life cannot be overemphasized. Subsequent increments of education along these lines are necessary and their full utilization should be demanded by the public.

Cases of Intestinal Parasites for Which Reporting is Required

	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Amebiasis	51	41	12	11	23	17	17	26	43	6
Ancylostomiasis	1	3	8	1	10	2	15	12	2	2
Ascariasis	2	28	16	1	3	5	19	7	28	13
Trichinosis	----	----	----	----	----	2	----	----	----	----

Other Intestinal Parasites Reported Voluntarily

	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Endameba coli	-	-	----	1	----	----	----	----	7	----
Pinworms (E. vermicularis)	- -	----	----	----	----	----	9	1	1	-
Tapeworms (T. saginata and T. solium)	----	----	----	----	----	----	----	5	2	----
Endameba hartmanni	----	----	----	----	----	----	----	----	1	----
Endolimax nana	----	----	----	----	----	----	----	----	1	----
Giardia lamblia	----	----	----	----	----	----	----	----	1	----

Laboratory Findings in the State Hygienic Laboratory

	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Giardia lamblia	23	30	55	58	26	15	37	18	14	32
Ascaris lumbricoides	4	----	9	8	2	3	19	1	13	53
Hymenolepis nana	1	1	1	1	----	5	1	10	1	1
Endolimax nana	----	----	2	----	----	3	25	16	19	19
Necator americanus	21	10	22	11	11	1	15	11	----	2
Endameba histolytica	1	3	1	----	8	3	8	11	15	9
Enterobius vermicularis	1	9	1	7	21	19	19	12	1	7
Trichuris trichiura	----	----	7	2	1	3	----	1	----	--
Strongyloides stercoralis	----	----	----	----	----	2	----	----	----	3
Endameba coli	- -	----	----	----	----	15	41	15	34	71
Endameba hartmanni	----	----	----	----	----	----	3	21	17	39
Dientameba	----	----	----	----	----	----	1	2	- -	-
Trichimonas hominis	----	----	- -	----	----	----	----	5	1	2
Chilomastix mesnili	----	----	----	----	----	----	----	1	2	----
Tenia saginata	----	----	----	----	----	----	----	3	----	1
Iodameba butschlii	----	----	----	----	----	----	- -	2	----	1



EDITORIAL

Arkansas Medicine — 1964

Alfred Kahn, Jr., M.D.

What is the status of Medicine in Arkansas 1964? By almost any parameter, it is good. There are areas which need improvement but the overall picture is significantly good.

The best yardstick of medical practice is "patient care". Too often this is confused with specialty care. In this context, it refers to the care the individual patient receives not in just the metropolitan areas but throughout the state. This really means in Arkansas are the general practitioners in the small communities performing good patient care? Definitely yes. Mishandled cases referred to metropolitan hospitals are a rarity. Consultants visiting smaller communities at the request of local physicians are virtually unanimous in the opinion that the patients have had good treatment, and of a type which conforms to the recommendations of medical teachers and standard texts. The Arkansas Academy of General Practice should get much credit for the competency of the general physician. This organization has sponsored frequent teaching seminars, and it has stressed continuing post graduate education. Practice outside of the metropolitan areas in Arkansas is certainly better handled by the well trained general physician than the specializing physician.

Of particular value to the patients in the smaller communities are the efficient new hospitals dotted around Arkansas. Accidents and the sudden onset of disease are not limited to cities; for example, farm injuries represent a significant fraction of the total injuries in this State. Prompt hospital attention to a mangling farm injury has saved many lives. The frequency of road accidents and farm accidents means that the general physician practicing outside of metropolitan areas must have surgical training; this implies training beyond the conventional year of internship and it is available in the University of Arkansas Medical Center, in the private hospitals, and under the tutorship of experienced surgeons.

The medical specialties are well represented in the larger cities, and except for extremely unusual problems, good medical and surgical care can be obtained near the patient's home community. Cardiac surgery, for example, is no longer a rarity in Arkansas; all types of brain surgery are performed; radio-isotope studies are commonplace, etc.

A rather interesting development which has improved patient care in at least one of the very large cities is the influx of general physicians, especially into the perimeter areas of the city. It has become commonplace to think that the general physician is being squeezed out of metropolitan practice by specializing physicians. Actually, the young general physicians moving into larger cities have several interesting effects. First of all, they tend to practice in a small geographic area and thus are nearer their patients in emergencies: this same geographic nearness, due to physicians offices being dispersed through the suburbs and city, makes it much easier for the patient to reach his physician's office for minor complaints and "office type treatments". The general physician practicing in a neighborhood gets to know his patients better. Lastly, the specializing physicians are pleased to have the influx of general physicians as it frees the former to perform the type of specialty work in which he is interested; this is especially true in Internal Medicine. This symbiotic relationship between the different branches of medicine flourishes best

when there is mutual recognition by the specializing physician of the general physician's need as a "family doctor" and by the general physicians recognition of the need for consultation and referral if the case is outside of his general training; this mutual recognition is a preventive against internecine quarrels over hospital privileges—thus all segments of the medical community can freely use the hospital for the type of case best suited to his skills.

Public health services in Arkansas are good and readily available. There is a fine Medical Center. There are centers for the care and teaching of the blind, deaf and dumb. There is a colony for handicapped children. The State Health Department is active and well thought of by the practitioners in Arkansas. The new hospital for nervous disease should be outstanding: it has a fine staff already.

Medical care in Arkansas is good. There are areas which need improvement but the overall standard is good and one in which this progressive state can be proud.

ANSWER—Electrocardiogram of the Month

RATE: 64 RHYTHM: Normal Sinus Rhythm

PR: .15 QRS: .12 QT: .38

INTERPRETATION: Abnormal. Total Inversion of Lead 1 with prolonged QRS and Diminishing voltage in precordial leads, indicates the presence of dextrocardia with right bundle branch block.

COMMENT: This tracing could be confused with reversal of arm lead wires but the diminishing voltage of QRS over the left chest indicates the diagnosis. Precordial leads made over the right chest showed the usual increase in voltage.

ANSWER—What's Your Diagnosis?

Diagnosis: Polyp of the descending colon.

X-Ray Features: The polyp presents as a well circumscribed lucent filling defect in the lower descending colon. The spot films demonstrate the pedicle by which the polyp is attached to the colon wall.

Solitary polypoid lesions of the colon in children are practically never malignant and usually present, as in this case, with a history of cramping and passage of bright red blood.

MEDICINE IN THE NEWS

Trends in Financing Medical Education 1941 to 1962*

Trends in Financing Medical Education is a continuing study being conducted by the Division of Operational Studies. It is concerned with the expenditures by sources of income and by type of school for a representative sample of U.S. medical schools. The study represents an effort to develop an understanding of trends in the amounts and relative importance of the various sources of medical school income as they have changed over the past two decades, and to suggest the need for strengthening diversification in the financial support of the nation's schools of medicine.

Medical school expenditures can be divided into three main categories: (1) funds available for basic operations, (2) funds designated for research training, and (3) funds designated for research itself. This presentation deals only with funds in the first category, i.e., those for basic operations. Such funds represent money over which the medical school has complete control, or which, while they may be designated for specific purposes, can be used in a manner that is consistent with the school's basic responsibilities and which, as a consequence, free undesignated funds for other purposes.

"Tuition and fees," "endowment," "university funds," and "state appropriations"—still primary sources of support for basic operations—have decreased in relative importance over the years. At the same time a trend has developed toward greater reliance, relatively speaking, on "overhead for grants," "payments made by hospitals, clinics and miscellaneous service and research units." The same is true to some extent for "teaching expenses paid from medical service funds."

*Submitted by the Division of Operational Studies of the AAMC.

Fifth Congress of the International Diabetes Federation

Toronto, Canada — More than 1,000 of the world's top authorities on diabetes met at this Canadian shrine of diabetic research in July and took part in the greatest scientific assault on the disease since insulin was discovered in Toronto 43 years ago.

New President of Associated Students

Kent Westbrook, a medical student from Clarksville, will serve as president of the Associated Students of the University of Arkansas Medical Center during the 1964-65 academic year. The Associated Students is an organization representing all students at the Medical Center and is designed to promote professional and social unity among students in the schools of medicine, nursing, pharmacy, x-ray technology and medical technology.

New Pathology Diplomates in Arkansas

The American Board of Pathology announced that a total of 310 pathologists have been certified this spring as Diplomates in pathology. To become eligible for certification, an M.D. must have one year of internship and three or four years of training as a resident physician in pathology. Dr. George A. Atkinson and Dr. William S. Medart, Jr., both of Little Rock, are the two new Pathology Diplomates in Arkansas.

OUTSTANDING SENIORS

Outstanding seniors in the various schools were honored at the University of Arkansas Medical Center during Honors Day Convocation. Dr. Horace Marvin, professor and head of the department

of anatomy, was the convocation speaker, using as his theme the missionary obligations of medicine.

World Medical Conclave Held in Helsinki, Finland

The annual assembly of the World Medical Association was held June 13-19 in Helsinki, Finland. The WMA is referred to as the Parliament of the doctors of the world. Two additional nations—Lebanon and Nigeria—were added to membership in the organization in Helsinki, which makes a total of 60 nations in this world medical organization.

Dr. Ed R. Annis, Miami, Florida, who is also president of the American Medical Association, served as president of the World Medical Association the past year. In his presidential address in Helsinki he said: "Though doctors over the world differ in their customs and languages, their ultimate aim and purpose everywhere is to advance the art and the science of medicine and to protect the health of their patients—the people of the world."

He also said: "Medical and scientific decisions should be made by those especially trained in these fields. It is necessary" he said, "that doctors play an increasing role in affairs of government where health is concerned."

One of the delegates from the United States, Dr. R. B. Robins of Camden, Arkansas, last year introduced a resolution to the Council of the WMA asking that the World Medical Association concern itself about the rapidly expanding population of the world. As a result of Dr. Robins' resolution, a special "Report on the Increasing World Population" was rendered at the Helsinki meeting by Dr. J. R. Gosset of Paris, France. Further study will be given this subject by the World Medical Association.

David McCray Heads Student AMA

David McCray, son of Dr. R. V. McCray of Malvern, has been elected president of the Arkansas Chapter of the Student American Medical Association. He is a sophomore student at the University of Arkansas School of Medicine in Little Rock. Earlier this year, David represented Arkansas at a regional meeting of the SAMA in Oklahoma City and the national convention in Chicago.

Dr. Logue on Jordan Tour

Dr. Richard M. Logue, orthopedic surgeon, left Little Rock in June for Jordan, where he practiced orthopedics for about one month under



Official U. S. representatives to the annual assembly of the World Medical Association, Helsinki, Finland, June 13-19, 1964 (reading left to right), Dr. Gerald D. Dorman, New York City; Dr. Homer Pearson, Miami, Florida; Dr. R. B. Robins, Camden, Arkansas; Dr. Ed R. Annis, Miami, Florida; Dr. Ernest B. Howard, Chicago, Ill.; Dr. Norman A. Welch, Boston, Mass., and Dr. Charles L. Hudson, Cleveland, Ohio.

the auspices of MEDICO, the international medical help organization founded by the late Dr. Tom Dooley and the American Academy of Orthopedic Surgeons. Dr. Logue and his family toured Europe in connection with the trip to Jordan and were away from Little Rock for two months.

Dr. Rhyne Enrolled in Postgraduate Course

Dr. James T. Rhyne of Pine Bluff enrolled in May at Massachusetts General Hospital in Boston for an intensive post-doctoral course in pediatrics. The course is offered at the hospital under the auspices of Courses for Graduates, Harvard Medical School. It emphasizes recent advances in therapy.

Dr. Luck Heads Drive

Dr. H. D. Luck, Arkadelphia physician, has been selected state chairman for the Voter Registration Drive. He will manage the drive to secure enough names on a petition to place the matter before the voters in November.

Dr. Walker Locates in Arkadelphia

Dr. L. G. Walker has joined the association of Drs. Anderson and Tilley of Arkadelphia in the general practice of medicine with special interest in obstetrics and pediatrics. He is a 1963 graduate of the University of Arkansas and interned at St. Vincent Infirmary. At the end of his junior year in Medical School, Dr. Walker was awarded a fellowship in the L.S.U. Inter-American Program and spent two and one-half months at The Gorgas Institute of Panama studying tropical medicine.

The Month in Washington

Washington, D. C.—A new Food and Drug Administration regulation requires manufacturers to submit proof of effectiveness of drugs cleared between 1938 and June 20, 1963, and still on the market.

This retroactive regulation was the most controversial of a group of new drug regulations issued under the Kefauver-Harris FDA Act amendments enacted into law in 1962.

The Pharmaceutical Manufacturers Association said the government was "making a mistake in blanketing in drugs which have been regarded as old, safe and effective". The PMA questioned whether the FDA "has put too broad an interpretation on the 1962 drug amendments".

In protesting such a regulation before it was issued in final form, the PMA said a retroactive regulation would comprise "such sweeping requests for information as to be unreasonably burdensome on the industry . . . and ultimately on the Food and Drug Administration".

"The consumption of manpower, particularly of scarce, highly trained scientific personnel, that would be required to comply with the proposed regulations is staggering and bears no reasonable relationship to any possible benefit to the public," the PMA said:

"In fact the demand on the time of the scientific personnel of our member companies would be of such magnitude that it would impede and delay clinical research and the development of new drugs. Needless to say such a result would not be in the public interest."

Drug manufacturers had argued that so-called "grandfather rights" allowed them to continue to make claims contained in new drug applications cleared in the past, and that they should not now have to produce medical evidence to support these claims.

The FDA disagreed. It held that Congress, in passing the drug amendments in 1962, specifically made it the agency's duty to review all medical claims for "new drugs" cleared in the past on safety alone, "with the intention that any claim unsupported by substantial medical evidence should be discontinued after next October."

The FDA held that the "grandfather clause" gives the right to make unsupported claims for only two classes of drugs: (1) those on the market before 1938 and therefore exempted from new-drug clearance by the 1938 Act, and (2) those introduced after 1938 which were generally recognized as safe and therefore were never cleared as "new drugs".

"We are glad that Congress has given us this unique opportunity to review past medical decisions permitting several thousand new drugs to go on the market. This review will include not only a new look at the safety of these drugs, but a first-time comparison of the actual promotional claims with the medical evidence on which they are based," FDA Commissioner George P. Larrick said.

The new regulations require firms marketing drugs approved since 1938 to examine both their promotional materials and their clinical records

to be sure that all claims being made are justified by experience and that the promotional materials include all necessary warnings, contra-indications, side effects, and untoward reactions which may have shown up after the drugs were originally placed on the market.

Under the old law, new drugs were cleared on the basis of safety alone. There was no requirement that they be shown to be effective as well as safe for their intended uses, other than that claims of benefits be supported.

* * *

Boisfeuillet Jones resigned as Special Assistant to the Secretary of Health, Education and Welfare effective June 30.

Jones told President Johnson in his letter of resignation that when he began the job as Special Assistant for Health and Medical Affairs in January, 1961, he expected to stay about two years, but challenges in the position kept him there longer.

"I shall return now to private life in Atlanta," Jones said, "in a unique situation which will permit me to engage in a side range of philanthropic activity, including health, education, and welfare with which my interests have long been identified."

Johnson replied that he acceded with reluctance to Jones' wish to return to private life.

Jones had been considered influential in HEW policy matters and often had been spokesman for the department and HEW Secretary Anthony J. Celebrezze. There was no advance indications that Jones would leave the department and his resignation came as a surprise.

* * *

The Public Health Service has reported that the nation's birth rate has been declining steadily for the past two years. But the PHS anticipated a reversal of the downward trend.

There were 49,000 fewer births in the United States during the year ended March 31, 1964, than in the previous 12 months. The 337,000 births registered in this March was the smallest number for the month since 1955.

An increase in marriages in March—to a total of 109,000—was interpreted as foreshadowing a reversal in the decline in the birth rate.

"The marriage trend," the PHS said, "is now showing signs of increase, but it would take some time for this to affect the birth rate. The age composition of the female population, with increasing numbers of women entering the child-bearing ages, is also favorable to a higher level of fertility."

* * *

The National Academy of Sciences has reduced its recommended daily calorie intake for adults on the ground that Americans are living a softer life with less physical activity.

The calorie requirement of the so-called "reference man"—25 years old, weighs 145 pounds, and moderately active—was cut to 2,900 calories daily from the 3,200-calorie diet recommended in 1958.

The recommended diet of the so-called "reference woman"—25 years old, weighs 128 pounds, and moderately active—was reduced to a 2,100 calories per day from the 2,300 calories of 1958.

The recommended daily consumption of the nutrients thiamin, niacin, and riboflavin also were cut.

The new revision included alcohol for the first time in the consideration of nutrients. The Board estimated that Americans, on a per capita basis, consume 76 calories of alcohol per day. This estimate includes children and other non-users, and the average consumption of drinking adults is much higher.

The PHS also has reported that the decline in the U. S. death rate has been halted. This was attributed to (1) the leveling off of infectious disease deaths and (2) increased death rates from some chronic diseases and accidents.

Any further declines in the U. S. death rate probably will be small, the PHS said.



Course in Postgraduate Gastroenterology

For 1964, the American College of Gastroenterology is again offering a Course in Postgraduate Gastroenterology to be given at The Roosevelt in New York City, October 22, 23 and 24, 1964, immediately following the 29th Annual Convention to be held at the same place on October 19, 20 and 21, 1964.

Work of Foreign Physicians' Committee Taken Over by ACEP

The counselling and placement of refugee physicians in the United States, a service formerly performed by the National Committee for the Resettlement of Foreign Physicians, is now being done by the American Council for Emigres in the Professions, Inc.

M. D. Day at University of Missouri Medical Center

The annual M.D. Day program has been scheduled at the University of Missouri Medical Center for November 20 and 21. Scientific sessions at the two-day program will be presented by the combined faculties of the University of Missouri and the University of Kansas.

The following letter to the president of the Arkansas Medical Society was received from Dr. Edward R. Annis, president of the American Medical Association:

May 23, 1964
Joe Verser, M.D.
Harrisburg, Arkansas
Dear Doctor Verser:

We in AMA want you to know how much we appreciate the excellent progress made by the Arkansas Medical Society during your administration as President. You are to be highly commended for your outstanding leadership, not only for the many fine programs that you have carried out in the Society, but also for having testified before the House Ways and Means Committee last January and for telling the story of medicine to many civic and other organizations in the South.

Also, I wish to congratulate the other officers of the Society who served so faithfully with you, and especially Paul Schaefer for his excellent work as your State Executive Secretary. It is the dedication and devotion of all of you, who give so generously of your time and your talents, that will do so much to keep our great profession free of Governmental control. This, as we are aware, is vital if we are to continue to give the very best medical care to the American people, our patients.

It has been a great privilege and a pleasure to have been able to know and work with all of you. I have been kept informed as to your programs and your many accomplishments through the efforts of Aubrey Gates, Director of the Field Service Division, and A. M. Edwards, our Field Representative.

Again, please accept my sincere congratulations for a difficult job well done.

Cordially,
/s/ Ed Annis
Edward R. Annis, M.D.



PERSONAL AND NEWS ITEMS

Doctor is Speaker at Teacher's Meeting

Dr. Wayne W. Flora, superintendent of the McRae Memorial Sanatorium, was guest speaker at the annual colored teachers Appreciation Banquet at Franklin Elementary School in Blytheville. The annual banquet is sponsored by the Blytheville Kiwanis Club.

Dr. Hefley Honored

Dr. Bill F. Hefley, of Little Rock, was one of 17 physicians throughout the United States elevated to the rank of fellowship in the American College of Allergists at a recent convention in Florida.

Research Center Site

The Little Rock Veterans Administration Hospital has been selected as the site of the Southern Research Support Center, one of four VA Hospitals selected for similar centers in the United States. The new center will have a staff of forty, most of them technicians and medical personnel. In addition to research in the usual areas of major

medical concern, staff members will serve as consultants for VA investigators in a twelve-state area for which the Little Rock center will be responsible.

Film of AMA Retirement Plan Available

The AMA has announced the availability of an informational film explaining the Members Retirement Plan. It is particularly designed for showing to physician members at the local county society level. The color, sound film is 16mm and runs for 35 minutes. Requests for the film should give a choice of two or three possible screening dates and should be directed to: AMA Film Library, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

Dr. Rothert Returns for Visit

Since retiring as director of maternal and child health of the Arkansas State Board of Health, Dr. Frances Rothert has been serving voluntarily as medical and public health consultant of five Central American countries and Panama under the auspices of the Catholic Relief Services. She was recently in Arkansas for a vacation and an article relating her experiences in Central America appeared in a Little Rock Newspaper.

Dr. Alexander Discusses Physical Fitness

Dr. John E. Alexander, of Magnolia, spoke on "Physical Fitness" at the April meeting of the Central PTA meeting in Magnolia.

Dr. Flanigan Addresses Group

Dr. William J. Flanigan, professor of medicine and director of clinical research at the University of Arkansas Medical Center in Little Rock, addressed the quarterly meeting of the Fort Smith Clinical Society in April. He discussed kidney transplants.

UAMS Alumni Honored

During a meeting of the honorary medical society, Alpha Omega Alpha, held at the Medical Center in May, three University of Arkansas School of Medicine Alumni were elected to membership because of high contributions to medicine since graduation. They are: Dr. Harold R. Hipp, chief of medicine, Veterans Administration Hospital, Little Rock; Dr. Owen W. Beard, associate of medicine, VA Hospital, Little Rock; and Dr. Thomas Fletcher, Little Rock neurosurgeon and clinical faculty member at the Medical Center. Dr. Howard Barnhard, professor and head of the Department of Radiology at the Medical Center, was chosen an honorary faculty member.

Physicians Speak at Medical Technologists Meeting

Dr. John McCollough Smith, Dr. William S. Orr, and Dr. Kerrison Juniper, Jr., all of Little Rock, participated in the program for the annual state convention of the Arkansas Society of Medical Technologists at the Hotel Lafayette in Little Rock in April.

Dr. Benafield Appointed to Post

Dr. Robert B. Benafield of Conway has been appointed a member of the Regional Medical Advisory Committee of the Arkansas Red Cross Blood Program. He will represent the Faulkner County Medical Society in helping with medical problems and relationships in the blood program. Dr. Thomas F. Dilday, Jr., of Little Rock, is the medical director for the blood program.

Dr. Herron Speaker for Ceremonies

Guest speaker at dedicatory services for the Union Memorial Hospital in El Dorado on April 5th was Dr. John T. Herron, State Health Officer of the Arkansas Board of Health.

Dr. Ellis Receives Plaque

During the Annual Session in Hot Springs, the March 1944 graduating class of the University of Arkansas Medical School held a 20-year reunion and presented a plaque to a member of the class, C. Randolph Ellis of Malvern, in honor of his being named president of the Arkansas Medical Society.

Dr. Washburn Opens New Clinic

Open House for the Gord-Ella Washburn Medical Clinic in Cabot was held in May. The clinic is operated by Dr. C. Y. Washburn.

Dr. Goldstein Honored

Dr. and Mrs. Davis Goldstein were guests of honor at the annual Ladies' Night Banquet of the Fort Smith Rotary Club May 14th. Dr. Goldstein was honored for his 48 years in Rotary and his leadership in civic affairs in Western Arkansas.

Dr. James Kolb is Honored

During the meeting of the American Academy of General Practice held in Atlantic City in April, Dr. James M. Kolb, Sr., of Clarksville was presented with a certificate of appreciation in recognition of ten years of service in the Congress of Delegates of the AAGP.

Later, in Chicago, Dr. Kolb was elected as a Fellow in the American Society of Abdominal Surgeons.

Dr. Robins to Appear Before Platform Committee

Dr. R. B. Robins of Camden, a member of the AMA Board of Trustees, was named by that Board as one of the witnesses to appear before the Democrat Party Platform Committee regarding the health plank in the party platform. Negotiations are underway for Dr. Robins to write a daily newspaper column for two newspaper chains at the Democratic National Convention in Atlantic City in August.

Dr. Graham to Lead Campaign

Dr. G. Grimsley Graham of Little Rock has been named chairman of the 1964 Respiratory Disease Symptom Alert. The campaign is designed to warn people against chronic cough and shortness of breath as common symptoms of RD.

Conservation Award Voted Dr. Compton

Dr. Neil Compton of Bentonville received a conservation award at a dinner in Washington, D.C., on May 20th. He was one of ten non-professional and ten professional conservationists honored by American Motors. Winners were selected on the basis of dedicated work in the field of renewable natural resources which would not otherwise receive widespread public recognition and each received a bronze medallion. Dr. Compton has spearheaded the drive to preserve the Buffalo River. He was instrumental in forming the Arkansas Chapter of the Nature Conservancy and the Ozark Society, an organization dealing with conservation.

Dr. Ellis Guest of Malvern Kiwanians

Dr. C. R. Ellis of Malvern, Society president, was a speaker at the May meeting of the Malvern Kiwanis Club. He spoke on the importance of preventive measures as a responsibility for improved health.

OBITUARY

Dr. Barton A. Rhinehart

Dr. Rhinehart died June 6, 1964, at the age of 69, in a Little Rock hospital. He was a well-known radiologist who had practiced in Little Rock for 41 years. He was clinical professor at the University Medical School, a member of St. Vincent Infirmary staff and a founder of the University Medical Center Tumor Clinic.

He was a native of Idaville, Indiana, the son of Wesley A. and Sarah Bayles Rhinehart. He won membership in Phi Beta Kappa at the University of Indiana and was graduated from Indiana University School of Medicine where he was a member of Phi Beta Pi medical fraternity. He interned at St. Vincent Hospital at Indianapolis.

Dr. Rhinehart was the author of many professional papers and published a book entitled "Gastro Intestinal Disfunction". He was a member of the Pulaski County Medical Society, the Arkansas Medical Society, the American Medical Association, The American Geriatrics Society, the American College of Radiology, American College of Chest Physicians, the Arkansas Radiological Society, the Southern Medical Association, the Radiological Society of North America, the Arkansas Thoracic Society and the Alpha medical fraternity. He served in France with the Sixth Engineers during World War I and was a member of the American Legion. He was an enthusiastic private pilot and was a member of the Flying Physicians Association and other related organizations. Survivors include a daughter, Mrs. William M. Dabbs, Jr., of Little Rock, a brother and three sisters.

Dr. D. A. Dickerson

Dr. D. A. Dickerson of Marked Tree, a retired physician, died June 5th, 1964, at the age of 69. He was a native of Texas. He attended the University of Arkansas and was graduated from the Kansas City College of Medicine and Surgery. Dr. Dickerson was a Mason and a veteran of World War II and a member of the Craighead-Poinsett County Medical Society, the Arkansas Medical Society, the American Medical Associa-

tion. He is survived by his wife, Mrs. Ruby Fields Dickerson and a son, both of Marked Tree.

———————

Dr. Walter Alexander Nowlin

Dr. Nowlin died April 11th at the age of 83. He had practiced medicine in Roland for more than fifty years. He was a member of the Roland Masonic Lodge, Little Rock Consistory, Order of the Eastern Star, Scimitar Shrine Temple, American Medical Association, Arkansas Medical Society, Pulaski County Medical Society, and was a graduate of the Arkansas Medical School. Survivors include two daughters of Little Rock, three brothers, three sisters, three grandchildren and one great-grandchild.



PROCEEDINGS OF SOCIETIES

Craighead-Poinsett

The Craighead-Poinsett County Medical Society met at the Jonesboro Country Club in June with Dr. John Clifford, Assistant Professor of Obstetrics and Gynecology at Wayne State University School of Medicine in Detroit as guest speaker. His interesting and timely subject was "Carcinoma in Situ".

A financial report by the chairman of the polio committee was received and approved. The polio drive was an overwhelming success financially and from the standpoint of percentage of people immunized.

Ninth District

The Ninth Councilor District Society held a meeting in June at the Crescent Hotel in Eureka Springs with Dr. W. K. Jordon, Neurologist of Little Rock, Dr. W. G. Lockhart, Neurosurgeon of Fort Smith, and Dr. Neil E. Crow, Radiologist of Fort Smith, as speakers. The subject for the meeting was "Advances in Cerebro-Vascular Disease Management".

Baxter County

In April the Baxter County Medical Society held a joint meeting with the Ministerial Alliance at the Baxter General Hospital. A film entitled "The One Who Heals" was shown.

Independence County

Dr. John M. Grasse, Jr., of Calico Rock, has been accepted for membership in the Independence County Medical Society. He has practiced as a medical missionary in Puerto Rico and Nigeria, West Africa.

Phillips County

Dr. and Mrs. Daniel Tonymon hosted a steak supper honoring the doctors of Phillips County and their wives in March as a celebration of "Doctor's Day."

Lee County

The Physicians of Lee county participated in a mass immunization program with oral polio vaccine in April. 20,000 doses of the vaccine were available throughout the county.



NEW MEMBERS

A new member of Sebastian County Medical Society is DR. WILLIAM F. TURNER. He was born at Alexandria, Louisiana, and received his preliminary education from Washington University at St. Louis, Missouri. His M.D. degree was received from there in 1956. Dr. Turner's specialty is hematology and his office is at Holt-Krock Clinic in Fort Smith, Arkansas.

DR. ALFRED BARNETT HATHCOCK is a new member of Sebastian County Medical Society. A native of St. Louis, Missouri, he completed his pre-med at Dartmouth College in Hanover, New Hampshire; he then enrolled at the Washington University Medical School from which he was graduated in 1956. His office is at Holt-Krock Clinic in Fort Smith, Arkansas. Dr. Hathcock's specialty is orthopedic surgery.

Sebastian County Medical Society announces that DR. A. C. BRADFORD is a new member. He is a native of Watonga, Oklahoma, and he received his preliminary education from Watonga High School and the University of Oklahoma. He then enrolled at the University of Oklahoma School of Medicine and received his M.D. degree in 1955. He practiced at Lindsay, Oklahoma, from 1956 until 1960 and was in dermatology residency from 1960 until 1963. Dr. Bradford is a dermatologist and his office address is 100 South 14th Street, Fort Smith, Arkansas.

A new member of Pulaski County Medical Society is DR. PHILIP JAMES DEER, JR. He is a native of El Dorado, Arkansas, and he received his preliminary education from Hendrix College. He then enrolled at the University of Tennessee School of Medicine from which he was graduated in 1957. He completed his internship at the City of Memphis Hospitals. Dr. Deer's specialty is ophthalmology and his office address is 601 Scott Street in Little Rock, Arkansas.

DR. ROBERT RAMSEY MATTHEWS is a new member of Pulaski County Medical Society. He was born at Memphis, Tennessee, and received his pre-medical education from Memphis State College. In 1954, he received his M.D. degree from the University of Tennessee Medical School. His internship was served at John Gaston Hospital in Memphis, Tennessee. He practiced at Hackleburg, Alabama, from 1955 until 1959; at Baton Rouge, Louisiana, from 1959 until 1960; at the University of Arkansas Medical Center from 1961 until the present time.

Garland County Medical Society announces that DR. LEONELL CLARENCE STRONG, JR. is a new member. He was born at Meadville, Pennsylvania, and he received his pre-med at Allegheny College. His M.D. degree was received from Jefferson Medical School in 1947. He completed his internship at Delaware Hospital in Wilmington, Delaware. Dr. Strong is a surgeon and his office address is 1315 Central in Hot Springs, Arkansas.

A new member of Desha County Medical Society is DR. O. G. BLACKWELL. He is a native of Pine Bluff, Arkansas, and he received his preliminary education from the University of Arkansas. He then enrolled at the University of Arkansas Medical School from which he was graduated in 1958. He completed his internship at St. Vincent Infirmary in Little Rock, and he served with the U. S. Navy from 1960 until 1962. Dr. Blackwell's office address is 135 West Waterman, Dumas, Arkansas. He is a general practitioner.

DR. JOHN M. GRASSE, JR., is a new member of Independence County Medical Society. He was born at Chalfount, Pennsylvania, and he received his pre-medical education from Juniata College in Huntington, Pennsylvania. In 1952, he received his M.D. degree from Jefferson Medical College of Philadelphia. He served his internship at Montgomery Hospital in Norriltown, Pennsylvania. Dr. Grasse served in the U. S.

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Research in the Service of Medicine

1. Roach, T. C.: Therapy of Peptic Ulcer, J. Louisiana Med. Soc. *115*:136-139 (April) 1963.
2. Steinberg, H., and Almy, T. P., Drugs for Gastrointestinal Disturbances, Chapter 21, in Modell, W. (editor): Drugs of Choice –1964-1965, St. Louis, The C. V. Mosby Company, 1964, p. 343.

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Medical Corps from 1946 until 1947. He was a missionary in Puerto Rico for four years; he practiced at Warren Clinic in Warren, Minnesota, for one year; he was a missionary in Nigeria for three years. He is now in practice at Calico Rock, Arkansas. He is a general practitioner.



BOOK REVIEWS

MARRIAGE COUNSELING IN MEDICAL PRACTICE, a symposium edited by Ethel M. Nash, M.A., Lucie Jessner, M.D. and D. Wilfred Abse, M.D., pp. 368, published by The University of North Carolina Press, Chapel Hill, 1964.

This small book is probably of considerable interest to the physician who does some marriage counseling. It is adequate in all respects. It is easy to read. The information is authentic. It is recommended as a very good book on marriage counseling. AK

W. B. SAUNDERS COMPANY features the following new books and new editions in their full page advertisement appearing elsewhere in this issue:

MOORE—GIVE AND TAKE. New!—An intriguing volume relating the inspiring story of tissue transplantation, from its beginnings to modern-day successes.

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ELLIOTT—CLINICAL NEUROLOGY. New!—The latest help, ranging from material on the mechanics and physics of brain injuries to advice on the interpretation of somatic pain.

ELEMENTARY MEDICAL STATISTICS, Second Edition, by Donald Mainland, M.B., CH.B., D.SC., F.R.S.E., F.R.S.C., F.A.S.A., Professor of Medical Statistics, New York University Medical Center, pp. 381, published by W. B. Saunders Company, Philadelphia and London, 1963.

This text is designed to give an insight into the technique of compiling and interpreting medical statistics. The field of medical statistics is very difficult for most physicians and this book will afford some insight into the field. It is recommended, as its title purports, as a text of elementary medical statistics.

MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN WORLD WAR II, First Edition, by numerous authors, pp. 1062, illustrated, published under the direction of Lieutenant General Leonard D. Heaton, Washington D.C., 1964.

This book will be fascinating to physicians interested in military medicine and especially to those who served in the military services in World War II. Both the European and Pacific theaters of operations are reviewed. The reviews are, of course, by the imminent authorities in the field, such as Elliott C. Cutler, M.D., in Surgery and Loyl Davis, M.D., In Neuro-Surgery, etc. This book is heartily recommended to those interested in military medicine.

FUNDAMENTALS OF OTOLARYNGOLOGY, Fourth Edition, by Lawrence R. Boies, M.A., M.D., Professor of Otolaryngology, Chairman, Department of Otolaryngology, University of Minnesota Medical School; Jerome A. Hilger, M.D., M.S., Clinical Professor of Otolaryngology, University of Minnesota Medical School; Robert E. Priest, M.D., M.S., Clinical Professor of Otolaryngology, University of Minnesota Medical School; pp. 553, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1964.

This text book of Otolaryngology is well-written and well illustrated. It has a nominal number of references. It is thoroughly inclusive. It is recommended as an interesting text for medical students and interns. It is a convenient reference for general physicians.



Controlled Trial of Chlorothiazide in Treatment of Early Pre-eclampsia

D. N. Menzies (University College Hosp Medical School, London) *Brit Med J* 1:739 March 21) 1964

A group of women given random treatment with either phenobarbital and diet restriction or chlorothiazide alone is described. Forty-six were in the phenobarbital group and 54 in the chlorothiazide group. The administration of phenobarbital was continuous while that of chlorothiazide was intermittent. From the point of view of enabling patients with mild pre-eclampsia to be treated as outpatients, the chlorothiazide group was significantly better. Despite delayed admission, the maternal results were good. The perinatal mortality was similar—4.4 per cent in the phenobarbital group and 5.5 per cent in the chlorothiazide group. The trial as a whole did not improve the perinatal mortality in the unit, but there was no significant increased fetal loss. Diabetes mellitus is now considered to be a contraindication to treatment with thiazide derivatives. All other pregnant women who have hypertension, edema, or excessive gain in weight appear to be suitable for early and prolonged treatment with this drug.

September, 1964

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Vol. 61 No. 4

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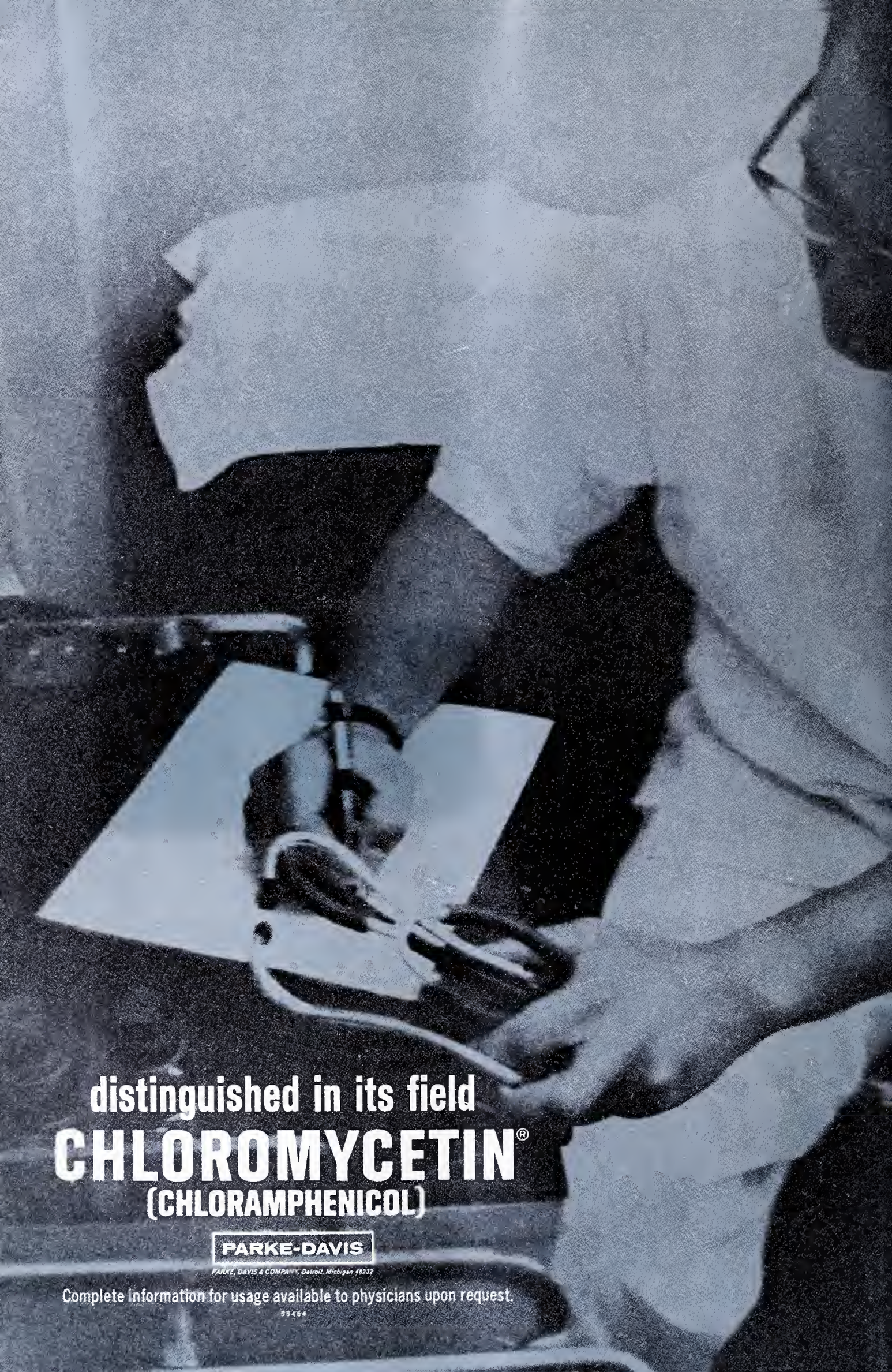
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NEWS—Our readers are requested to send in items of news, also marked copies of newspapers containing matter of interest to the membership.

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The Presence of Sulfur in Cigarettes as Determined By EPR Studies

W. Lohmann*

Many investigations concerning the carcinogenic effect of some "chemical factors" in cigarettes and their smoke have been done.[1] None of them, however, has been conclusive. In this communication the presence of sulfur in tobacco and its smoke will be reported. Methods for eliminating or reducing the sulfur content are proposed.

Recently we have reported[2] the presence of sulfur in many biological systems as determined by means of electron paramagnetic resonance (EPR) studies. A sulfur signal (characterized by a delocalization of odd electrons by the sulfur-containing group, heat, and/or radiation (SO_4-ion radical)) was found to be also present in cigarettes. Tobacco, ash, and filters (cellulose acetate, charcoal) of some commercially available American, Canadian, and English cigarettes as well as Burley and flue-cured tobaccos were investigated. Experimental EPR details are given elsewhere.[2] The smoke from cigarettes puffed artificially was obtained by using a mechanical smoking machine[3] (35 ml of air are drawn through cigarettes over a period of about 2 sec, once per min) and was collected by a fiber filter (Fiberfrax) placed into the vacuum line next to the cigarette. Furthermore, Burley tobacco was burned in an electric oven at different temperatures ranging from 100 to 800° C in order to study the "desorption" process known to be occurring in cigarettes.

The EPR spectra are shown in Fig. 1. The tobacco spectra showed a barely visible S signal at about $g = 2$. The presence of Mn^{2+} (6 lines) in most of the samples should be pointed out. A clearly defined S signal was obtained for ashes and smoke. In filters, this signal could be observed only after smoking. A charcoal filter placed between two fiber filters is almost without any effect: the intensity of the S signal was nearly the same in both of the fiber filters. Replacing the charcoal filter by activated charcoal, the S signal could not be observed in the filter next to the mouth because the volatile sulfur was absorbed by the activated charcoal. In this case, however, it was tremendously difficult to draw through and smoke was almost tasteless.

Tobacco, ash and contaminated filters of English and Canadian cigarettes, which contain no additives, exhibited, nevertheless, the S signal. This excludes any influence of the additives.

The presence of sulfur in the tobacco is well-known. The ash contains 1.2 to 3.4 per cent depending on the different tobacco brands.[4] The pleasing aroma of a cigarette, which gives a mild and flavorful smoke, is produced by the volatile yellowish brown oils of the tobacco (20 to 25 per cent of the smoke). Our own results suggest that sulfur is one of their constituents and plays an important part in the cigarette problem. Since the burning temperature of a cigarette (ca. 800° C) is above the boiling temperature of sulfur (444.6° C), sulfur can evaporate and, then, coagulate to a yellowish brown, viscous mass, the so-called, "plastic sulfur," in the colder regions, e.g. in butt, filter, and tracheal tract. Thus, tobacco burned at temperatures below 400° C should still contain most of the sulfur, while almost none should be present in tobacco burned above 500° C (see Fig. 1). In the latter case, the Mn^{2+} lines are still visible while the sulfur signal (existing perhaps as SO^-_4) is barely recognizable. The observation[4] that the main stream smoke (the inhaled air) is acid with a pH ranging from 4.5 to 6.3 supports our conclusions.

The results have shown that sulfur is present in

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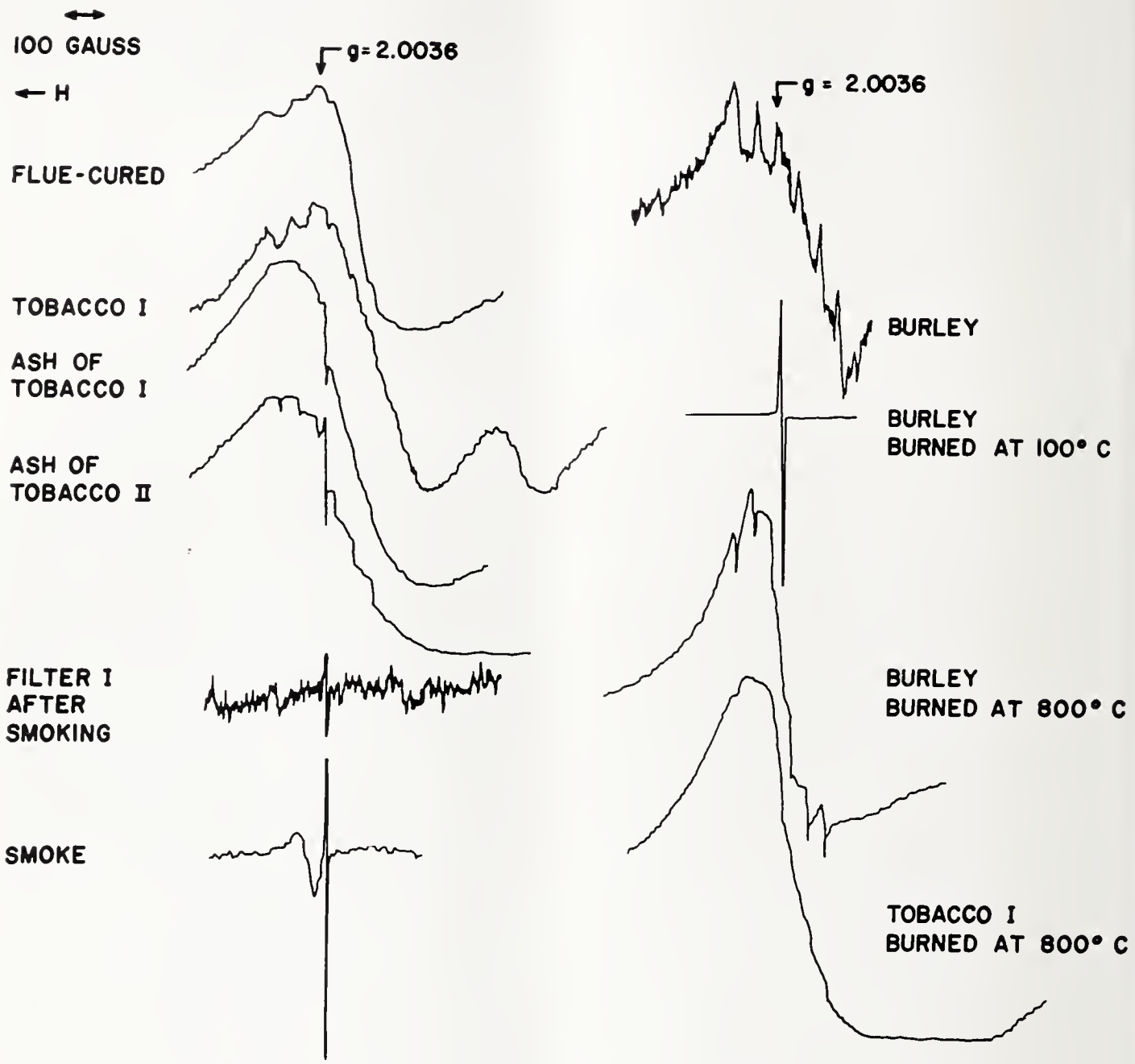


Fig. 1: Electron paramagnetic resonance spectra of different cigarette samples.

cigarettes and their smoke. It might be an important factor for the genesis of bronchial cancer. This would be in conformity with our recently proposed model for energy-charge transfer in biological systems,[5] which is based on a metal-water-sulfur complex. There, we could show that any deviation from the right amount of sulfur, giving an optimal biological function, causes considerable changes in the biological activity of the system. Sulfur might, therefore, act as an important initiator in the production of bronchogenic carcinoma. Biological tests, however, have to prove this hypothesis.

In order to avoid any adverse effect of smoke on health, sulfur has to be eliminated from it. This can be done in the following ways: increasing the weight of a cigarette and, thus, the tobacco density; use of water pipes or increasing the moisture content of a cigarette; increase in cigarette length or use of a cigarette holder; reducing the burning temperature; and use of additives which form rapidly a complex with sulfur. Since the burning zone has a great temperature gradient (800 to 100° C), sulfur will be absorbed at the tobacco itself in the cooler portions of a cigarette. A certain part of a long cigarette shall, therefore, remain unsmoked (safety region). If a cigarette is smoked almost completely, the adsorbed sulfur will be released again ("desorption" process) and reach the tracheal tract. Cigars, packed tighter than cigarettes, have an about neutral main stream smoke. Almost no sulfur was observed in their smoke. A selective filtering of sulfur might be achieved by certain additives,

such as Fe, Cu, etc., which form a complex with sulfur. However, the boiling temperature of these additives has to be above 800° C in order to avoid their evaporation and, thus, inhalation. Water also acts as a filter for sulfur. Furthermore, certain additives might reduce the burning temperature from 800 to below 400° C in order to keep sulfur from being volatilized.[6]

Research was supported by NIH grant RH-00197.

SUMMARY

Electron paramagnetic resonance spectra of tobacco, ash, smoke, and contaminated filters gave a sulfur signal at about g = 2. The charcoal filters normally used are ineffective in the adsorption of sulfur. The importance of inhaled sulfur in the etiology of bronchogenic carcinoma is discussed. Methods for eliminating the sulfur are proposed.

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Lung Antibodies in Patients With Pulmonary Disease

R. G. Burrell, J. P. Wallace, and C. E. Andrews University School of Medicine, Morgentown, WVa) *Amer Rev Resp Dis* 89:697 (May) 1964

The sera from 259 patients were examined for the presence of lung reactive antibodies using soluble and insoluble preparations from normal human lung as the test antigens. By means of a modified complement fixation procedure and the complement and antiglobulin consumption tests, the sera from 48.4 per cent of patients with pulmonary disease were shown to react with the insoluble preparations, as opposed to 6.7 per cent from the nonpulmonary group. Reactions with the soluble extracts were not significantly different between the two groups. The mechanism of this reaction was discussed and shown to be distinct from isoimmune and Wassermann reactions and nonspecific globulin interactions. The clinical types of pulmonary disease were compared with the incidence and type of serologic reactivity. Preliminary analysis of the antigenic preparations showed that one of the main reactive components was either collagen or a collagen derivative.

Clinical Syndromes Associated With Basilar Impression

A. R. Taylor (Royal Victoria Hosp, Belfast, North Ireland) *Arch Neurol* 10:475 (May) 1964

Basilar impression as a radiological entity is defined. Three groups of disorders result from invagination of the foramen magnum according to whether the maximum compression is felt on the spinal cord, the cerebellum, or the outlets to the fourth ventricle. Illustrative cases with their clinical and operative findings are described. The pathological causes of symptoms are considered, and clues are repeatedly found that simple pressure on the cord or cerebellum tonsils is insufficient to explain some of the syndromes encountered. A contributory vascular factor is suggested. The causes of the syringomyelia-like clinical picture are examined. Cases are cited in which no cavitation is found in the cervical cord at the expected level. Two new syndromes are described, associated with basilar impression recurring transient confusion and loss of consciousness, and episodes of hemiplegia with incomplete recovery.

The Interpersonal Relationship of Marriage *

Lena Levine, M.D.**

About two decades ago, I was asked to be a member of a panel on marriage (the panel including a few of my mentors in psychiatry and psychoanalysis). They demonstrated what I already knew—that they knew very little about this relationship. They, in turn, were surprised at how much I, a recent pupil of theirs, did know about the subject. My beginning in this area of marriage was in a specialized one—of the sexual relationship revealed by patients coming to a birth control clinic and only because they were asked about it. The typical attitude of the women of that time (three decades ago) was "my husband 'uses' me so many times a week, and I'm glad when he doesn't bother me." They were uninterested in their reactions. But, later the younger women who began to come were pleasantly surprised at the questions which they didn't think could be the concern of doctors. They had a problem also shared by their husbands—they didn't get satisfaction from sex relations—only babies. This brought the problems to those of us who asked them (gynecologists—mostly women) why didn't they? Psychiatrists at that time were busy with the psychotic and severe neurotics in state hospitals, and the few psychoanalysts were then not known to the medical profession. So we went about the business of trying (ourselves) to help them, and we did. The physical examinations and knowledge of physical normalcy was very reassuring. Proper contraceptive technique was helpful to relieve fear of an unwanted pregnancy and a discussion of sexual techniques and how they might be modified helped to make a satisfactory sex adjustment. But when these measures failed to achieve the desired result, usually sexual orgasm for the female, then we were helpless. It was at this point that I sought to learn what psychiatry and psychoanalysis could offer and to embody it in the help given these women. With this knowledge too, I was prepared to explore the other aspects of the marital relationship when women and then men or both came for such help. The group I saw was of the middle class (the lower economic group had for years been receiving such help in the course of other aid by the social and welfare agencies). The middle class had thought problems of marriage were to be solved by themselves. But by now, the impact of emotional development and its problems in adult life had sufficiently infiltrated in this class. So these people began to seek help for the dissatisfactions they were finding in their married lives. Many other disciplines came to their aid, but psychiatry still with rare exceptions did not take this relationship into their province.

A scattered few psychoanalysts wrote a little—one prolific writer came up with the idea that marriage was essentially a masochistic-sadistic relationship and to be treated as such.

Formulations of theoretical concepts of the relationship were not forthcoming. Most disciplines were borrowing from psychiatric, psychoanalytic and psychological findings about individuals and incorporating them in their teaching and practice.

Fortified by my own experience in medicine for many years previously, and from experience in a marriage clinic I developed with the aid of Dr. Abraham Stone, now deceased, a medical orientation of diagnosis and treatment, first formulating the physiology or psychodynamics, then how to make a diagnosis based on the psychopathology and then treatment based on the diagnosis. The dynamics of the marital relationship, one that can give great satisfaction to men and women alike and one that creates a climate that makes possible healthy development of children, will be presented to you.

In an analysis of the dynamics of marriage, two factors need consideration: The persons and the marriage, the characteristics of the individuals involved and their interaction in the marriage.

Two unique personalities come to marriage. They have characteristics common to all human beings, but they also have individual characteristics due to their sex, their genetic inheritance, the ideas, feelings, and attitudes that they had acquired as a result of their development in a particular family, in a particular place in the family constellation, and in a particular social group. The kind of marriage the two will make will, therefore, depend upon the kind of people they are. There is, however, also the other factor involved in marriage: the inter-relationship that results from the interaction of these two different personalities. In marriage the two individuals

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have to adjust themselves to each other as well as to many other new people and situations not of their own choice—the spouse's family, relatives, friends, and a new and different way of life. They have to be able and willing to give up as much of their personal freedom, which they may have struggled long to achieve, in order to make a satisfactory adjustment to the new relationship. They must be able as well as willing to share the basic satisfactions that men and women seek in marriage — the security of love and companionship, sexual satisfaction, a home, and a family.

To make the many compromises and adjustments required for a satisfactory marriage, a person has to have a flexible and mature personality, he has to be physically and emotionally grown up. But emotional maturity alone is not enough. It may give the individual the potentiality for making the required adjustments, but it does not necessarily insure a good marriage. A person's own maturity will not inevitably guide him to choose a partner who is also mature; he may fall in love and marry a person who is not at all grown up, who has a character disturbance, or marked neurotic tendencies. Later, he may resent the mate's personality deficiencies and inability to grow and develop, and may not be willing to accept the fact that under such circumstances most of the adjustments have to be made by him.

The men and women we see in marriage consultations are of varying degrees of emotional development—some are adult and well-balanced, some are immature or with neurotic traits, and some are neurotic or psychotic. These people, the neurotic or even the psychotic, whom we saw in the marriage clinic would not normally be seen in psychiatric offices, hospitals, or clinics because, as long as they are single, they manage to get along fairly well in life. When they marry, however, they become disturbed because their behavior is resented by their mates and because they are unable to make the required adjustments. They are found fault with and blamed for character traits that they themselves feel to be natural to them, and not subject to challenge or change. Seldom do they receive the type of acceptance that makes possible modifications of personality or even growth toward maturity.

Men and women seek love and emotional security in marriage. The need for emotional security, vital to the infant and the growing child, remains a need throughout the life of the adult as well. A mature love relationship between a man and a woman is a source of such security. Mature love differs from childish love in that it seeks not merely the satisfaction of self, but even more so the satisfaction of the beloved partner. It is also different from romantic love, which is a state of illusion in which the loved one is endowed with all the qualifications one would wish to find in him or her. Since our culture has placed a high value on romantic love, many men and women regard it as the basis for marriage. The realities of living, however, bring about a rapid disillusionment. Love of the kind to marry on is one in which the man or woman is fully aware not only of the assets, but also of the deficiencies of the partner. These are accepted as part of the individual, to be understood and lived with.

Mature love is normally expressed to the person loved with word and gesture, with signs of affection and tenderness. Yet American cultural values do not encourage the unrestrained expression of emotions. If it is manly not to show feelings, but to keep a stiff upper lip in the face of fear, grief, or anger, it is also not manly to be too emotional, demonstrative, or "woman-like" in the feelings of affection and love. Lack of demonstrativeness, however, often become a source of irritation and resentment. "I know he loves me, but why doesn't he say so?" or, "Why doesn't he show his love in some way?" is a frequent complaint.

A husband is often perplexed at his wife's insistence upon a greater show of his love for her. He fails to understand that she has a far greater need for evidence of love and affection. This need is due to a fundamental difference in their emotional development. Both boy and girl start life with a greater dependence and attachment to the mother than to the father. In return, they give her the greatest share of their love. For the boy, this emotional relationship remains unchanged: as an adult, he again gives his love to a woman. The girl, however, must make a profound shift from mother love to father love if she is to be able to accept fully her husband's love. Hence, she seems to have a constant need for reassurance and support from her husband.

Mature love and an ability to express it and give it freely is an essential base for a good marriage. Not all people, however, possess the same degree of feeling or can demonstrate their feeling with equal facility. If we accept the fact that people have varying degrees of emotional ca-

pacity, then all one can expect is for the individual to express his feeling to the extent of his own capacity.

Another satisfaction men and women seek in marriage is a mutual response in their sex relations. A man and woman fully grown to maturity should normally bring a healthy heterosexual attitude to their marital relations. This will express itself in a mutually pleasurable response, with a culminating climax or orgasm for each. This good feeling extends to other areas in their relationship and facilitates the required adjustments.

But in the sexual sphere, also, many problems arise. The couple may be ignorant of the basic anatomical and psychological aspects of the sexual relationship, or they may be inhibited by cultural taboos and superstitions, by distorted attitudes, conscious or unconscious anxieties, and guilt feelings. Even though, intellectually, they may come to accept the normality of sex, they may yet be unable to free themselves from their fears and the resulting inhibitions.

Constitutional variations in sexual capacity also have to be considered. First, there are the basic physical and biological differences between men and women. The male genitalia are external and superficial, while the vagina is internal and less subject to contact and stimulation. Erotic sensations in the male are usually felt chiefly in the sexual organs; in the female they are more diffused and they are rarely felt in the vagina before sexual intercourse has been experienced. In women, sexual desire is more cyclical and depends to a larger degree upon inner physiological and emotional stimuli than it does in the male. A woman, however, can accept the male at any time, even when she has no desire at all, while a man can function only when he has become stimulated and has erectile capacity.

Male arousal and response, in sex relations, furthermore is generally faster than that of the female. Many women have great difficulty in achieving orgasm, or can reach it only through clitoral stimulation and not through coitus. The reasons for this orgasm failure is now becoming clear. It was thought to be due entirely to neurotic mechanisms. But cultural inhibitions have been shown to be most causative except for the relative small group where it is due to personal inhibitions. This had been hypothecated by me and proven to be so by the increasing number of young women who seek birth control advice now who, today when asked about their sex lives, comment in surprise, Of course they achieve orgasm and with penetration. "Doesn't every woman?"

Since stimulation of sex desire is primarily psychic in origin, the type and strength of the stimulus required in a given instance is subject to many variations. With child bearing and age, a woman's body changes. She becomes less exciting and stimulating. The frequency and intensity of the sex urge may differ considerably between the husband and wife. Sometimes he has more desire and she resents his frequent approaches; and at times her sexual desires may be greater or more frequent and the husband will find difficulty in meeting her needs. Her demands for prolonged love-making, which are frequently necessary for her physical and emotional satisfaction, may at times be irksome to him. If she takes the initiative and tries to arouse him, he may resent it, while she, in turn, may take his attitude as a sign of rejection or of his loss of feeling for her as a woman.

The ability to work out a mutually satisfactory sex relationship demonstrates an ability to consider not only one's own needs, but those of the mate as well. When the frequency of desire varies, as it so often does, working out a pattern satisfactory both to husband and to wife implies a willingness to change one's own rhythm or to give up some of one's own needs for the sake of the other. When the woman's response is slower, as it frequently is, the man's control of so powerful an impulse as the sex force shows evidence of thoughtfulness and consideration for the woman who is sharing this experience. Similarly, the wife who is willing to accept her husband and give him the satisfaction he seeks, even though she may have little desire at the time, shows the depth of her feeling for him—her pleasure in giving him something he needs and desires. The satisfactions of a mate's needs may be justifiable even when they are not necessarily mutual. The man should, however, be able to accept his wife in the sex relations without resentment, even if she does not have a complete response.

A third element in marriage is the desire to build a home and family. Most married couples want children, and only a small percentage remain voluntarily childless. There is a basic, powerful urge in women to conceive and to bear children. The use of scientific contraceptive methods merely makes possible the planning of parent-

hood. Planning and spacing children have become increasingly widespread among all social strata.

Yet this ability to plan has created new problems. It places the decision of whether and when to have a baby upon the parents themselves. Husband and wife do not always agree about the timing or the number of children. Nor do they always agree of the type of contraceptive to be used. The husband may wish the wife to take the necessary precautions, and she may want him to share the responsibility. Rejection of contraceptive methods or irregular use is sometimes a sign of unconscious conflicts regarding pregnancy and motherhood, or else an indication of a strong desire for a child.

Infertility can also become a difficult psychological problem in marriage. The lack of ability to procreate is a severe blow to self-esteem, and the knowledge of it leads to a marked feeling of inadequacy. Conversely, there may also exist deep-seated anxieties which contribute to the infertility. In any event, the resulting conflicts may lead to much marital dissatisfaction.

Mature mutual love, sexual responsiveness, and sharing in parenthood are the dynamics of a happy, healthy, stable marriage. Because of differences in personality, in physiological capacities, or in emotional needs, conflicts may arise in any of these areas. Other factors, too, may lead to marital disturbances. A married couple does not live in isolation. Cultural, religious and educational differences, social and economic factors may be sufficiently acute to become a cause of serious difficulties in a marital relationship. Unemployment, illness, lack of adequate housing, and particularly in-law interference frequently cause anxieties and conflicts in a relationship that might otherwise have been very satisfactory.

Technological advances, particularly the increasing participation of women in industrial and professional life, the progressive diminution of her economic dependence on her husband, labor-saving devices in the home—all of these are today affecting the character of marriage and family life.

The newer concepts of masculinity and femininity conflict with the stereotyped male and female roles. The latter implied an aggressive, strong, dominant male and a submissive, weak, gentle female. A man went out of the home to earn the money to maintain the household and a woman remained in the home and limited her activities to being a wife, mother, and homemaker. In every culture the male has been the "provider" and the woman, the "preparer." Today these roles are being modified. A woman may be as capable in industry and earning capacity as a man is; she may even be able to earn more money than he does. When she works outside of the home, she expects him to participate in the household tasks. If she helps with "providing," then she would like him to help with the "preparing." This change in the previously well-defined roles of men and women adds new stresses and strains to the adjustments in marriage. Many people are confused by these factors and are not ready or equipped to recognize and accept them.

The gradual transition from an authoritarian, patriarchal family system to a democratic organization brings further problems. One of the many aspects of this newer concept of family life is the problem of mutuality. When women were submissive, they had few expectations, whether social or sexual. They were satisfied with their role of wife and homemaker. Now they expect to have mutual interests, mutual tastes, mutual attitudes to families and friends, and also mutual sexual gratifications. Since this is not always possible, one or the other or both may come to feel that there is something wrong with their relationship.

Formerly families were held together in spite of conflicts by external pressures of law, religion and society. Today these outer forces have begun to lose their effectiveness. Men and women can now separate without loss of status within the community or the family group. Marital stability depends, therefore, more on the cohesive power of an inner unity and harmony than on the adhesive forces of social pressure.

Infidelity is another threat to marriage. In the past, infidelity in husbands was tacitly accepted, and a wife was protected from the knowledge of it. If she found out about it, she merely had to wait until the affair blew over. But the women of today, now that the old fears of infection and conception no longer hold, may also be tempted by the adventure of an extramarital affair. This adds another difficulty to maintaining a stable, permanent family unit.

These changes in values and attitudes have come about relatively fast; they have not as yet infiltrated sufficiently into the pattern of family living. At present we are still in a stage of transition. Each new generation has to improvise its

behavior instead of being able to lean on tested experiences. We have severed our moorings to the old and have not yet anchored to the new. This makes for much tossing about of family life.

Marriage is a dynamic relationship. It requires continual adjustments as the family begins, as it expands with the coming of children, and as it contracts when the children later leave to establish their own family units. Some of the dissatisfactions in marriage emerge in later life, among the older people, particularly when they have failed to make a satisfactory mutual adjustment earlier in their relationship and have remained together only because the children were at home.

These observations on the dynamics and the pathology of marriage are based on a psycho-bio-social orientation. They represent the viewpoint of one who treats the individual as a total person, as an integrated being with a body, a mind, and emotions, which interact and influence one another.

The dynamics and problems inherent in the relationship itself for all men and women have been presented. For the emotionally immature and emotionally disturbed there are added difficulties in managing in this relationship. For many, the marital relationship has lost its great value at the time when it is shown how essential it is for adult satisfaction. And many don't want to give so much of themselves to this relationship and yet their expectations from it are very high.



Radiation Nephritis: Light and Electron Microscopic Observations

S. Rosen et al (M. A. Swerdlow, 6001 Green St, Chicago) *Amer J Clin Path* 41:487 (May) 1964

Two patients with radiation nephritis are reported and the well documented cases in the literature are reviewed. In one patient a renal biopsy was obtained and studied by light and electron microscopy. The glomerular changes were the dominant histopathological feature in both patients, and consisted of hypocellularity, atypical nuclei, and capillary luminal occlusion by eosinophilic fibrillar material. By electron microscopy, the glomerular endothelial cells were swollen and the basement membrane blended with large quantities of lamina densa-like material on its endothelial aspect. Within this material erythrocytes and segments of endothelial cytoplasm were seen. Therefore, at least in some instances, it is the glomerular lesion which is most prominent in radiation nephritis rather than the tubular or interstitial changes.

Inexorable Aortic Stenosis

W. P. Johnson et al (L. A. Cobb, 325 Ninth Ave, Seattle) *Arch Intern Med* 113:706 (May) 1964

Of 30 patients with symptomatic, calcific aortic stenosis and who survived blind transventricular aortic commissurotomy prior to 1960, 21 patients died after an average of 25 months; nine were alive after an average postoperative follow-up of 43 months. The 50 per cent survival time of the patients, followed since surgery, was 33 months, and the mortality rate was 19 per cent per year. Although a moderate increase in valve orifice area was obtained in some patients, recurrence of symptoms was generally observed after one to three years. Only one patient has had sustained improvement. Reduction of the effective aortic valve area suggesting restenosis was observed in two patients, 20 and 24 months postoperatively. Any benefit from palliative "closed" aortic valve surgery was limited to transient symptom relief and, at most, only a modest prolongation of life.

Affectional Systems in Rhesus Monkeys[1]

Harry F. Harlow and Bill Seay[2]

University of Wisconsin

A SERIES OF RESEARCHES HAS BEEN conducted at the University of Wisconsin Primate Laboratory to determine the effects of various kinds of social rearing conditions on subsequent social, sexual, and maternal adjustment of monkeys. Groups of monkeys have been raised in total isolation from birth until 3 months, 6 months, and 12 months of age.

Those raised from birth onward in total social isolation for one year are totally incapable of forming effective social relationships with other monkeys and never exhibit infantile sexual behavior. Six months of total social isolation exerts very severe, crippling influences on subsequent social adaptability. Eleven weeks of total social isolation, on the other hand, has no permanent effect on subsequent social development.

Total social isolation is not an absolute requirement for social obliteration. Monkeys housed in wire cages, with or without either a wire or cloth surrogate mother (Harlow & Harlow, 1962) during the first 12 months, suffer enormous social damage as indicated by subsequent interactions with each other or with normally raised animals. They gradually develop abnormal personal-social behaviors including violent circling from floor to ceiling of the cage, staring vacantly into space, and even aggression against themselves, biting their hands, arms, feet, and legs, sometimes to the point of severe lacerations. None of these males has ever engaged in effective sexual congress with any female, not even eager and experienced females from our breeding colony, and only a few females have exhibited normal female posturing and acceptance of our breeding colony males, and this only after repeated pairings with these males. (Continuous, repetitive breeding attempts now indicate that approximately 50 per cent of the females can eventually be inseminated).

These data indicate that there is some period, probably between the sixth and twelfth months, that is critical for normal social development in monkeys raised under laboratory conditions. The data might also suggest that real monkey mothering is a variable of overwhelming importance for the normal psychosexual development of rhesus monkeys. Such an assumption should be viewed with caution, however, because the raising conditions we have described deprive the developing monkey infant not only of a real mother, but also of any opportunity to form the affectional responses to other infants which apparently develop during the intense playful interactions that characterize normal infant-infant contacts in the first year of a rhesus monkey's life.

In an effort to unravel the relative and absolute importance of the confounded variables of mothering and playmate interaction, we tested three groups of monkeys in our playpen situation (Harlow, Harlow & Hansen, 1963; Hansen, 1962) shown in Fig. 1. In this apparatus each mother-infant pair occupies a large cage adjoining one cell of a four-unit playpen. A small opening in each living cage restrains the mother but gives the infant continuous access to the adjoining playpen compartment. During the two daily test sessions, each an hour long, wire-mesh screens between playpen compartments were raised, permitting the infants to interact as pairs during the first 6 months and both as pairs and as a group of four from 6 to 15 months. Two playpen groups were raised by real monkey mothers and one group was raised with cloth surrogate mothers. The babies raised by real mothers showed normal

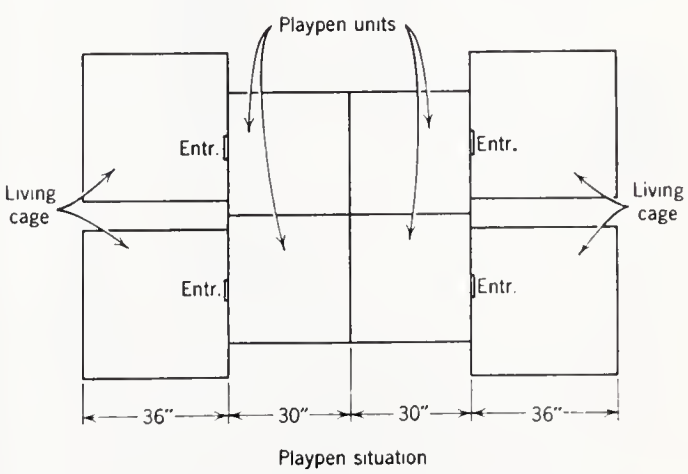


Figure 1. The playpen apparatus

[1]This research was supported by grants MH-04528 and FR-0167 from the National Institutes of Health to the University of Wisconsin Primate Laboratory and Wisconsin Regional Primate Research Center, respectively.

[2]Now at the Department of Psychology, Louisiana State University, Baton Rouge, Louisiana.

play patterns. By the end of the first year and a half of life both females and five of the six males had demonstrated the full adult patterns of heterosexuality.

Although we have the impression that the infants raised by real mothers were more advanced socially during the first 15 months than those raised on cloth surrogates, the number of subjects was small and the sex composition of the groups was not identical. We are not, therefore, in a position to make definitive statements concerning the importance or nonimportance of real monkey mothers compared with cloth surrogates. The fact remains that the babies raised on cloth surrogates and given opportunities to interact with each other and to form mutual affectional bonds did show normal personal-social behaviors, developed complex, interacting play patterns, groomed, and exhibited near-normal sex behavior during the second year of life. Furthermore, when all twelve monkeys were separated from their mothers and tested as one group, the surrogate-reared monkeys proved to be dominant in food competition according to the subjective judgment of experienced observers.

We have additional data on eight infants raised individually on cloth surrogate mothers and allowed to interact in groups of four, 20 min. a day in our playroom situation (Rosenblum, 1961). The playroom shown in Fig. 2 is an enclosure

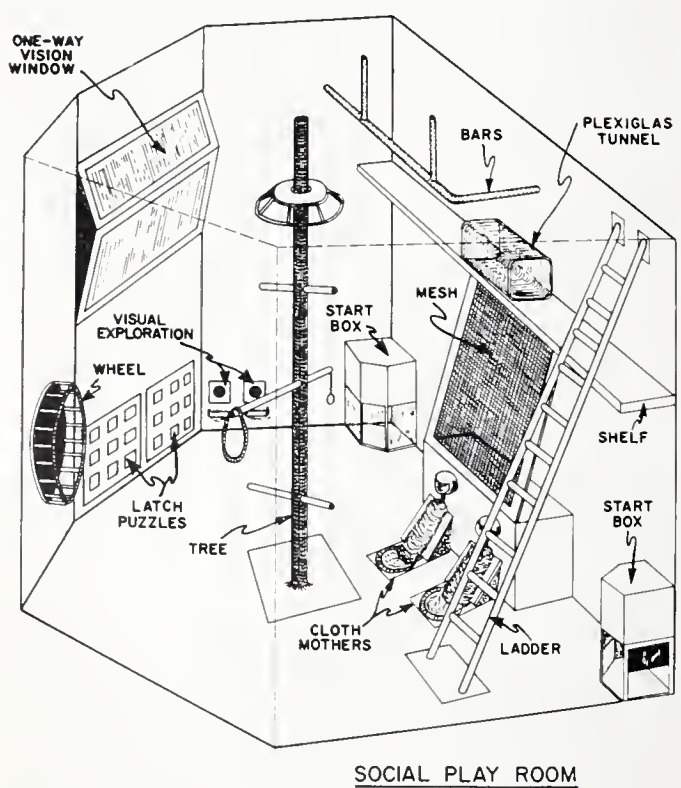


Figure 2. The playroom

approximately 8 ft. high with 40 sq. ft. of floor space. It contains a number of movable and stationary toys and exploratory devices and a wealth of climbing objects including an artificial tree, a ladder, and a hardware-cloth climbing ramp leading to an elevated platform. The rich environment of the playroom appears to be very efficient in eliciting both exploration and play responses from rhesus infants.

Both playroom groups of four infants, two males and two females in each case, showed normal play patterns quantitatively and qualitatively, demonstrated sex patterns at an early age, and all monkeys—both the males and the females—showed appropriate, adult-type heterosexual responses during the second year of life. Thus, all these monkeys given the opportunity for infant-infant interaction in the playroom for even a limited period of time appear to be totally and completely normal in play behavior although sexual behavior was somewhat less mature during the first six months than that of 8 real-mother-reared infants subsequently raised in sex-balanced groups (Seay, 1964).

We have data on an additional mothering condition combined with infant interaction, our so-called "motherless mothers" (Seay, Alexander & Harlow, 1964). These were four mothers that had been raised from birth either in bare wire cages or with a cloth surrogate. Although none of these monkeys ever demonstrated normal female sex behavior, they were finally impregnated through the patience, persistence, knowledgeability, and motor skills of male monkeys from our breeding colony. All four females were totally inadequate mothers, and none of the infants would have survived had it not been for the intervention of staff members. None responded to the infants' distress calls and all infants were initially removed from the mother's cage and hand-fed without interference from her. Two of the four "motherless mothers" were primarily indifferent, paying little attention to the infant unless it was in physical contact. They punished their babies by biting them, kicking them away, or crushing them to the floor (see Fig. 3), but only when the babies tried to make contact. The other two struck their babies, bit them, crushed them to the floor, and jumped on them without any apparent provocation, seeking them out if they were not within reach. Oddly enough, after the first few days these very abusive mothers permitted cradling and



Figure 3. Abusive maternal behavior

nursing sufficient to sustain the infants, but their behavior was erratic and they often ended the nursing periods by assaulting the infants.

The four infants had an age spread of 21 days and developed into an adequate playpen group. Their play responses during the first six months were close to normal in quality, but lower in frequency than those of playpen infants with normal mothers; sexually they were as precocious as any group we have studied. The lone female and all three males exhibited adult-type heterosexual behavior long before the end of the first year. It is probable that these monkeys were also more aggressive toward each other than other monkey groups, but this is not clearly established, in part because we have had no other group with this kind of sex split and have no standard of reference. Certainly their almost totally evil mothering left no serious deficits in these four rhesus infants that knew no affection other than that which was imparted by their peers. Indeed, it would appear to be a safe prediction that two of the group—one male and the female, both raised by the more indifferent mothers—could establish themselves as dominant members of any peer group. The remaining two males are a question, for they play a predominantly submissive role to the other pair but maintain an active competition between themselves.

Supplementary data have been collected on five other mother monkeys denied real monkey mothering. Three of these were totally inadequate mothers and two provided adequate care for their infants. These two adequate motherless mothers had earlier peer social experience than those mothers who failed to care for their infants. Three of these inadequate motherless mothers gave birth to second infants and cared for them adequately, completely to our surprise. Comparison of primiparous and multiparous captive monkey mothers previously provided normal mothering and normal infant-infant interaction revealed no important differences in infant care (Seay, 1964).

One other experiment provides supplementary information. Four infants, one male and three females, were placed together in a large cage in the second week of life and housed together thereafter. In addition, for 11 months they had extensive experience in the playroom. These animals showed less play in their home cage and in the playroom than have other groups and their play was slow in developing, as illustrated in Fig. 4, but these differences may be partly a function of the sex split—females play less actively than males—and even more a function of the 24-hour-a-day opportunity for interaction. If playmates are always available, monkeys have no need to make the most of the brief period when they are under observation. At a year of age, they show fully

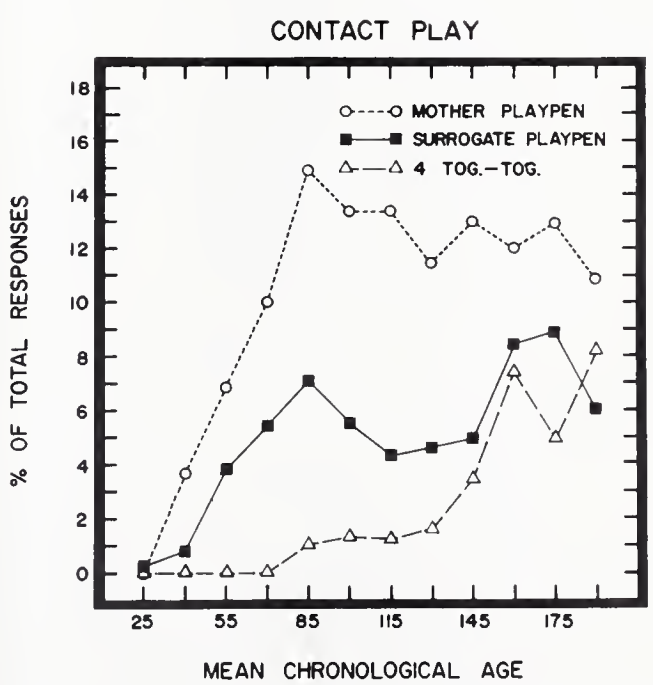


Figure 4. Contact play in three groups of infant monkeys

mature heterosexual patterns, no personal-social deviations, and they live together amicably.

No one will question that real, normal monkey motherhood is an important variable in imparting normality to rhesus monkeys as revealed in social adjustment in infancy, adolescence, and adulthood. Furthermore, real monkey motherhood is doubtless a variable of far more importance in the wild than in the protected situation of an experimental laboratory. Nor would anyone seriously question that normal human mothering is an important variable in the social development of the child. Even so, these researches attest to the enormous importance of affectional relations between infants and preadolescent peers. In the monkey, at least, it would thus appear that under favorable circumstances, real mothers can be bypassed.

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Influence of Progesterone and Mineralo-Corticoids Upon Myasthenia Gravis

M. Frenkel (University of Chicago Clinics, Chicago) and E. N. Ehrlich, *Ann Intern Med* 60: 971 (June) 1964

Exacerbations of myasthenia gravis have been associated with pregnancy as well as the premenstrual phase of the reproductive cycle. Since increasing rates of progesterone production are characteristic of pregnancy and the normal premenstruum, it seemed likely that progesterone might be responsible for the diminution of strength in these circumstances. The fact that progesterone can influence electrolyte balance by virtue of its capacity to inhibit the salt-retaining activity of mineralo-corticoids provides a means of relating the metabolic properties of progesterone to alterations of muscle function, since proper neuromuscular excitation is dependent upon the relative concentrations and rate of transfer of these electrolytes across cell membranes. The effects of progesterone and of desoxycorticosterone, a mineralo-corticoid, were studied in a group of patients with myasthenia gravis, including three young women who exhibited premenstrual exacerbations of weakness. The parenteral administration or endogenous secretion of progesterone unquestionably had a deleterious influence upon myasthenia gravis after a delay of several days, and a decline in strength closely followed the occurrence of sodium retention. Since aldosterone excretion was increased above the norm, when retention of sodium occurred, it seemed likely that the detrimental effect of progesterone might have been related to a compensatory rise in mineralo-corticoid activity resulting from its initial natruretic influence.

* * * * *

Mycetoma in the United States: A Review and Report of Seven New Cases

W. O. Green, Jr. (University of Texas School of Medicine, Galveston) and T. E. Adams, *Amer J Clin Path* 42:75 (July) 1964

Seven new casees of mycetoma in Texas are presented; six were caused by *Nocardia* species and one by *Monosporium apiospermum*. Previous acceptable cases (56) of mycetoma from the United States are tabulated. The two major groups of causative fungi are discussed with the practical importance of their subdivision being emphasized. The terms nocardiomycosis and maduromycosis are suggested for cases of mycetoma due to *Nocardia* species and the true fungi respectively. Microscopically special emphasis is placed on the identification of fungus colonies in tissues with the Gram and Gomori methenamine silver stains. The clinical features and more recent experimental evidence pertaining to therapy are discussed.

WHAT'S NEW?



Greatest Problem Facing Mankind

R. B. Robins, M.D.*

The benefits of modern medicine have cut mortality rates in infancy and have vastly increased life expectancy all over the world to such an extent that it has created the greatest problem facing mankind in our time—and that is the population explosion over the earth.

It has taken man a million years to achieve a world population of approximately three billion people and it amazes one to realize that in the next forty years this number will double. The projection is that every forty years thereafter the world population will again double and, if the present rate continues, within the next 600 years it is estimated that the number of human beings on earth will be such that every person will have only one square-yard to live on—standing room only.

At the present time two-thirds of the world's population goes to bed hungry every night. For every meal we as individuals eat, two other people eat nothing, or practically nothing. And one of these two people is a child. There are only five nations on earth today that are able to produce more food than their own people need. (United States — Canada — New Zealand — Australia — and Argentina.)

Automation is shaking up the industrial world and the employment picture. Automation is displacing people from work. We recognize this as the basis at the present time for most of our labor union troubles with the recent examples of the newspaper stoppages in Cleveland and New York and the threatened railroad strike which involves thousands of firemen who are trying to hang on somehow. The most unfortunate victims of automation are the unskilled people, especially the young looking for a first job and school drop-outs who possess neither training, experience or seniority. Even skilled people in modern day life must look forward to automation developing to such an extent that many of them will have to change their trade or livelihood once or twice during a lifetime.

So, we face the great challenge of what to do with people. We are fast running out of use for people, yet we are producing people faster than ever.

The United States consumes roughly half of the world's annual production of nonrenewable resources. Americans never seem to think about our vanishing resources, but we are finding that the United States year after year is becoming more dependent on other lands for most of the strategic and critical materials essential to the nation's defense. Yes, we happen to be riding high in the economic saddle today, but time is probably catching up with us.

Population pressure is a great factor in political instability. The problem of rapidly increasing numbers in relation to natural resources, which are dwindling, is now the central problem of mankind. Overpopulation leads to economic insecurity and social unrest. Unrest and insecurity lead to more control by central governments and an increase in their power over people. It obviously follows that more and more power of the central government over people leads to more and more loss of freedom for the individual. In this manner dictatorships take over.

Thoughtful people of all nations and religious beliefs must now come to face reality in consideration of methods to decelerate world population growth. One of our country's leading Catholic physicians, Dr. John Rock, emeritus Professor of Gynecology of Harvard Medical College, has written a recent book titled "The Time Has Come" which is recommended reading on the subject discussed in this editorial.

*Camden, Arkansas.

TEACHING SEMINAR

University of Arkansas Medical Center
Little Rock, Arkansas



Mechanisms on Antibiotic Activity

John C. Schultz, M.D.

The activity of antibiotics against bacterial cells and their toxicity to mammalian cells is the subject of several reviews (1-3). Certain biologic differences of the host and infectious agents permit these drugs to kill or inhibit bacteria without usually injuring the host. Complications of antibiotic therapy indicate that this activity may, however, be directed to the host as well as to the infectious agent. Re-evaluation of antibiotic therapy has produced the desirable effect of heightened awareness to the possibility of complications and will hopefully result in a decrease in antibiotic misuse (4, 5).

Antibiotics may have their primary mechanisms of action on cell wall, plasma membrane, synthesis of proteins or nucleic acids and intermediary metabolism. The bacterial cell wall has been demonstrated by electron microscopy but is not seen in the usual stained smear. It is the rigid supporative component of the cell. The function of the cell wall is to protect against mechanical and osmatic trauma. The cell wall contains polysaccharides, lipids, proteins and mucopeptide polymers. The unique compounds muramic acid, d-glutamic acid, d-alanine and diaminopymelic acid are present in bacterial cell walls but have not been found in animal cells (6). All the mucopeptides contain n-acetylmuramic acid which is the 3 carboxethyl ether of n-acetylglucosmaine. The uridine nucleotides are precusors in the synthesis of this compound. Ribitol and glycerol phosphate polymers represent up to 50% of the dry weight of some bacterial cell walls. They are repeating units of ribitol or glycerol joined by phosphodiester bridges (7). The cytidine nucleotides seem important in their synthesis. The plasma or cytoplasmic membrane lies on the inner surface of the cell wall and is a complex lipoprotein with little mechanical strength. The membrane functions as an osmatic barrier, a transport system, and contains enzymes important for cell wall synthesis (8). The ribosomes are the sites of protein synthesis in bacteria. The twenty-plus amino acids within bacterial cells are ordered into the polypeptide chain of the forming protein. The amino acid sequence depends on a labile RNA called messenger of template RNA. Template RNA depends on DNA and reflects the nucleotide sequence of the hereditary material. Amino acids within the cell are activated by specific activitating enzymes and are transferred to specific soluble RNA. The amino acids in the sobule RNA forms are transported to their polymerized positions on the ribosome (2, 6). Subsequent mention will be made of analogues effective in inhibiting nucleic acid synthesis and intermediary metabolism in the bacterial cell.

Antibiotics may be classed according to their primary mechanism of action against:

a. Bacterial cell wall
 1. Penicillin
 2. Cycloserine
 3. Bacitracin

b. Cell membrane
 1. Polymyxin
 2. Colistin
 3. Amphotericin and Nystatin
 4. Streptomycin group

c. Protein synthesis
 1. Tetracycline

2. Chloromycetin
3. Erythromycin
4. Streptomycin group

d. Nucleic acid synthesis
1. 5-iododeoxyuridine
2. Griseofulvin

e. Intermediary metabolism
1. Sulfa drugs

It would be preferable to classify antibiotic activity in chemical terms but limitation of knowledge does not always permit this. It is difficult to distinguish primary from secondary changes and new knowledge will result in alterations of this classification (9).

Cell Wall Antibiotics

The primary action of penicillin is the inhibition of cell wall synthesis. Cytidine and uridine nucleotides accumulate and protoplasts which can grow in hypertonic media are formed. If organisms are not synthesizing cell wall material, they will not form protoplasts and will not lyse. This has clinical significance in suppurative infections, when bacterial multiplication is less frequent than usual (10). Penicillin has no known mammalian toxicity. All forms of penicillin have in

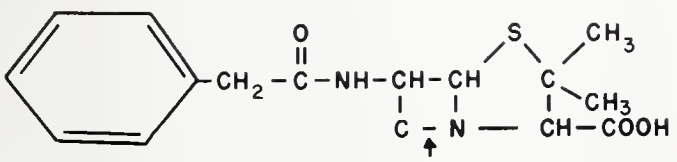


Figure 1. Penicillin G. The arrow indicates the site of penicillinase activity.

common the 6-aminopenicillanic acid nucleus which is allergenic. Figure 1 is a structural representation of the basic penicillin G molecule.

Cycloserine is an analogue of D-alanine and prevents the racemaziation of L to D-alanine. It also inhibits D-alanyl D-alanine synthesase. These activities result in proplast formation and an increase in uridine nucleotides. Unfortunately cycloserine also inhibits mammalian transaminases and causes metabolic toxicity manifest by central nervous signs and liver function abnormalities.

Bacitracin is a peptide antibiotic with significant activity against Gram positive but little activity against Gram negative organisms. It has a common binding site with penicillin. In contrast to penicillin activity protoplasts are formed which can't grow. This agent has significant renal toxicity when administered parenterally. The development of penicillinase resistant penicillins has resulted in a decreased necessity for its systemic use. Presently it is used extensively in topical therapy.

Plasma Membrane Antibiotics

The agents presently thought to have primary activity on the plasma membrane share common renal and central nervous system toxicity. These antibiotics are similarly dependent on renal mechanisms for their excretion. The observed toxicity may be related to their higher concentrations in renal tissues resulting in renal cell damage with consequent decrease in excretion and ever increasing blood levels of the agent. The safe use of these drugs depends on adequate evaluation of renal function before and during therapy. The dosage of the agent must be sharply reduced if significant decrease in renal function exists. Polymyxin B and colistin methane sulfonate are very similar antibiotic agents. Colistin may be identical with Polymyxin E (11). Polymyxin will lyse bacteria in hypertonic media and does not require cell growth for its effect. The evidence for the plasma membrane activity includes the leakage of purines and pyrimidines out of the cell and of dyes into the cell. Electron microscopy using fluorescent polymyxin has demonstrated fixation to the plasma membrane of sensitive bacterial cells.

Amphotericin B and Nystatin are polyene antibiotics effective against fungi. The bacteria are uniformly resistant to them. The cell membrane of bacteria contain no sterols. Amphotericin B binds to the cell membrane of sensitive fungi resulting in a loss of entracellular components. Red blood cells contain sterols and incubation with Amphotericin B results in hemolysis. This may explain the occasional hemolytic reaction complicating amphotericin B therapy.

Streptomycin, Neomycin, and Kanamycin share effects related to plasma membrane and inhibition of protein synthesis. The best studied member of this group is Streptomycin, whose structure is shown in Figure 2. The observation of potassium efflux, the leakage of 5′ ribonucleotides and amino acids from treated streptomycin sensitive cells support the plasma membrane as a site of primary activity. The inhibition of protein synthesis as a mechanism of activity is supported by the interference of poly-L-phenyl alanine synthesis in sensitive organisms. The requirement of greater concentration of streptomycin to achieve

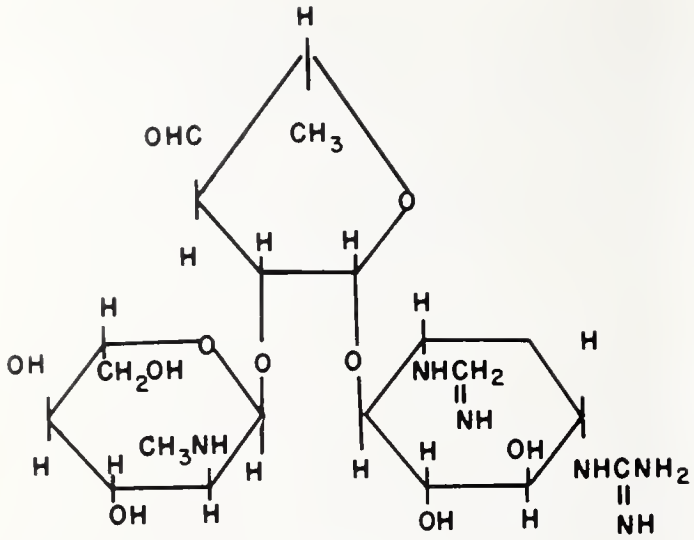


Figure 2. Structure of streptomycin.

the same effect is noted in resistant organisms.

The mechanism of streptomycin resistance is clinically strikingly different than the mechanism of penicillin resistance. Penicillin resistant organisms produce an extracellular enzyme penicillinase that converts penicillin to penicilloic acid. The site of activity is shown in Figure 1. Although the mechanism of streptomycin resistance is probably related to spontaneous genetic mutations in bacterial cell populations. This has been appreciated clinically and is the basis for using another antibiotic with streptomycin.

Inhibition of Protein Synthesis

Several differences are known to exist in the protein synthesis of bacterial and mammalian cells. Mammalial cells have an endoplasmic reticulum which only few bacteria possess. Bound to this reticulum are the microsomes; i.e. the particles most active in protein synthesis. The template RNA of mammalian cells is more stable than in bacterial cells. Tetracycline is an effective antibiotic in daily use. Its mechanism of action has been ascribed to complexing with polyvalent ions (13), causing inhibition of specific enzymes with decrease in energy production (14) and more recently in the transfer of leucine from soluble RNA to the ribosome (15). High dosage tetracycline therapy has been observed to produce fatty liver changes both in experimental animals and man (16, 17). Metabolic balance studies reported by Shils demonstrated negative nitrogen balance in patients treated with tetracycline (18). Fatalities have occurred in patients receiving large dosages of tetracycline (17, 19). Figure 3 illustrates the structure of tetracycline and its analogues chlortetracycline and oxytetracycline.

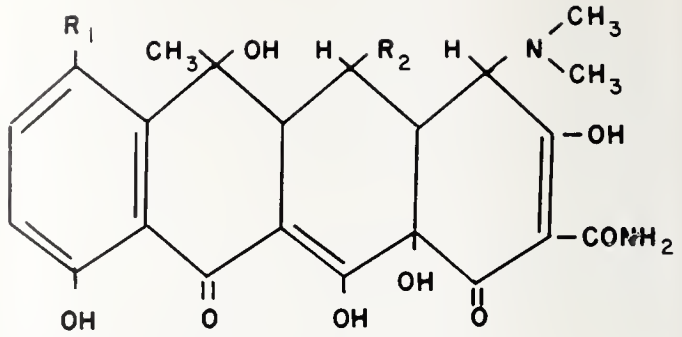


Figure 3. Structure of tetracycline: Tetracycline R_1 R_2 = H: Chlortetracycline R_1 = CL, R_2 = H; Oxytetracycline R_1 = H, R_2 = OH.

Generally these antibiotics have similar metabolic activities.

Chloromycetin has not been associated with many of the clinical toxic effects ascribed to tetracycline. It infrequently causes aplastic anemia. This toxic bone marrow effect can be recognized by an increase in the serum iron and a decrease in the reticulocyte count. The evidence of its antibacterial effect includes the production of protein poor ribosome when incubated with E. coli. A decrease in template RNA concentration and in the function of template RNA had been shown. Chlormycetin also inhibits the activity of a synthetic messenger RNA polyuridylic acid (20).

Enthyromycin has a large lactone ring in its structure and belongs to the macrolide group of antibiotics as does oleandomycin. It is effective against gram positive but not gram negative organisms, perhaps because it cannot penetrate the gram negative cell wall (3).

Nucleic Acid Synthesis

Nucleic acid synthesis appears to be very similar in all species studied and agents effective in inhibiting microbial nucleic acids usually inhibit mammalian synthesis as well. Two exceptions will be briefly mentioned. 5-iodo–2-deoxyuridine is effective in the topical treatment of herpes simplex (21). Its mechanism of action is ascribed to inhibition of DNA polymerase of the virus. Griseofulvin is used in therapy for superficial fungus infectious, it is a purine analogue.

Intermediary Metabolism

Intermediary metabolism also varies little from species to species and only occasional instances of known dissimilarity can be used to clinical advantage. Figure 4 shows the similar structure of sulfanilamide and para-aminobenzoic acid. Bacteria synthesize their own folic acid. The sulfa drugs are structural analogues and inhibit

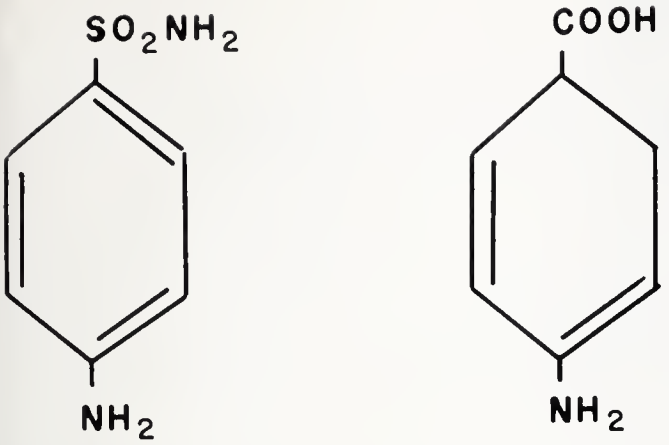


Figure 4. Structures of sulfanilamide and para-aminobenzoic acid.

this synthesis. The bacteria are unable to use mammalian folic acid and humans require exogenous folic acid. Reactions related to the ingestion of these drugs depend on hypersensitivity phenomenon, poor solubility of the drugs, or inherited deficiencies of glucose-6-phosphate dehydrogenase.

Summary

Several frequently used antibiotics are discussed. The presently proposed mechanisms of activity are reviewed. An attempt is made to classify these agents into groups. The commonly noted toxicity of these agents is noted.

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ELECTROCARDIOGRAM OF THE MONTH

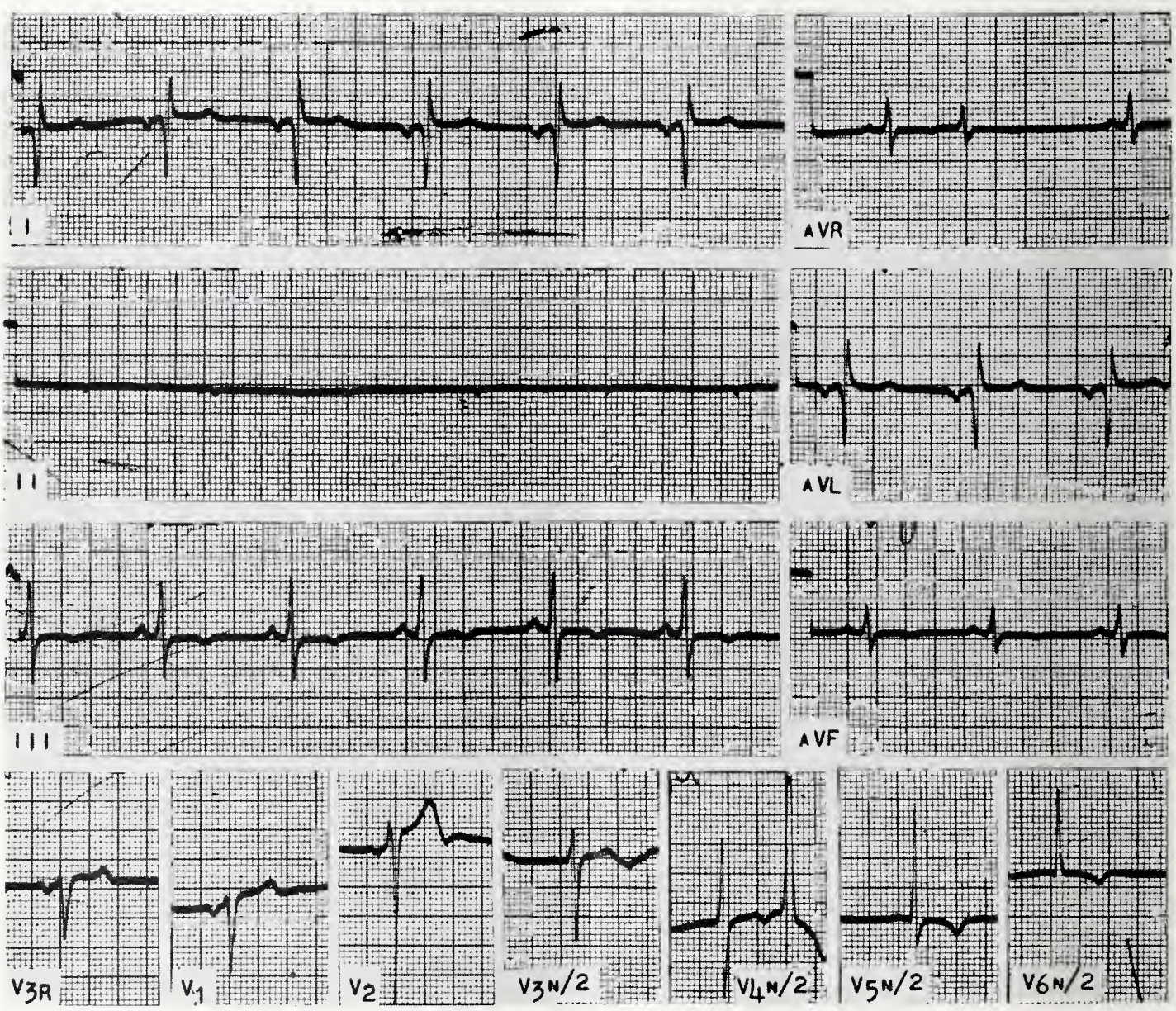
WHAT IS YOUR INTERPRETATION?

AGE: 73 SEX: M BUILD: SLENDER BLOOD PRESSURE: Not Recorded

CARDIAC DIAGNOSIS: NONE

OTHER DIAGNOSES: Ca. of prostate
MEDICATION: None
HISTORY:

Answer on page 121



The Department of Medicine, University of Arkansas Medical Center
*James S. Taylor, M.D., Professor of Medicine



WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

Answer on page 121



No. 12-57-19 4 year-old female

HISTORY: One month prior to admission the child complained of mild periumbilical pain and the parents noted progressive abdominal distention. Two weeks prior to admission the parents felt a mass in the abdomen.



Enteric Bacterial Diseases

Enteric bacterial diseases are by far the commonest cause of diarrheal conditions. A feces specimen for culture frequently removes the mystery from such cases. Where local laboratory facilities are available a culture should be made prior to institution of therapy in diarrheal conditions. A representative specimen of any outbreak of diarrhea should be sent to the State Hygienic Laboratory. Also selected specimens for culture from individual cases are acceptable at the State Hygienic Laboratory. The State Hygienic Laboratory will assist a local laboratory with typing of shigellae and salmonellae, as well as collaborating on any bacteriological problem.

An agglutination series gives presumptive evidence at best, and a report of a single specimen should never be the basis of a diagnosis. A second agglutination showing a higher titer is still only presumptive, further it lacks the definitive characteristics imparted by identifying the causative organism through culture. A distinct advantage in utilizing culture is that phage typing assists in identifying the proper carrier as well as spread cases.

The impact of man upon his fellowman has many ramifications emotionally and physically. Let us consider at this time only the bacterial enteritides which result from overcrowding and poor sanitary facilities or practices. The soil with nature's scavengers took care of the intermittent human excreta for sparsely populated areas as encountered by our pioneer forefathers. No one else was around to acquire a subculture of the organisms before natural die-off had occurred, even if the birds, rodents, insects, and other animal life had not taken care of it. In desert areas the fecal matter merely dehydrates or dessicates to natural fertilizer. Today the sediment from the sewage of some cities is enough to profitably provide private employment to several men in the manufacture of a sterilized dry fertilizer. The nomadic individual could wash his hands in the brook with little likelihood of a water-borne epidemic resulting since dilution, aeration, sedimentation, actinic radiation, and other natural factors had ample time to purify the natural waters. Today it is difficult to get the public to understand the reasons for prohibiting swimming, water skiing, and the use of boats with toilets on our public water supply reservoir lakes.

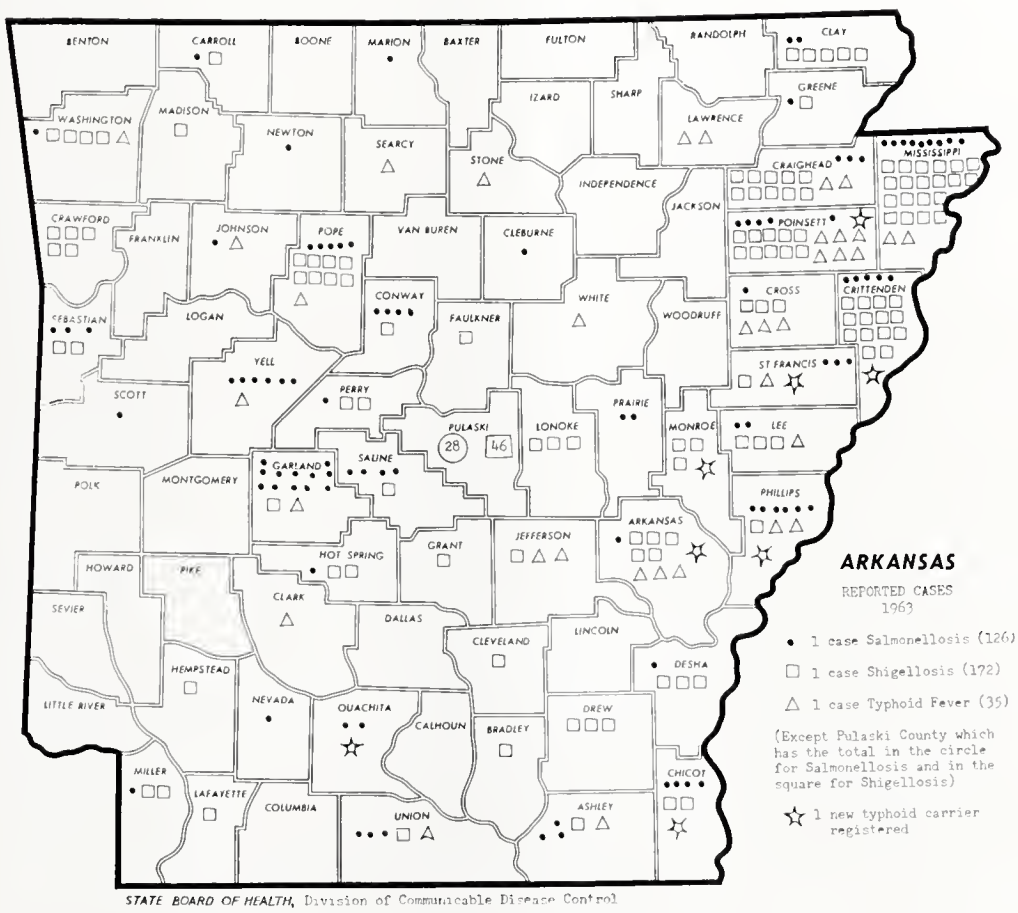
Although Arkansas has Legislative Acts that equal or exceed the United States Public Health Service standards for pollution control and public water supply, it is desirable to prevent any contamination of our natural waters that is possible to avoid the potential threat of epidemics due to enteric bacteria in the event of a breakdown in sewage treatment facilities, as well as subsequent purification facilities where surface water is used for the city water system.

It goes without saying that each case of enteric bacterial disease must arise from a previous case or a carrier. The completion of the fecal-oral cycle in most instances is facilitated by hands. Prompt diligent handwashing after defacation is our most efficient method of breaking this fecal-oral cycle. Most of us are well aware of the family resistance to certain bacteria that cause little or no trouble among the individuals of that household whereas a visitor who is susceptible succumbs to the disease.

The accompanying map shows the location by county of the 1963 enteric bacterial diseases that were reported to the Arkansas State Board of Health's Division of Communicable Disease Control directly or were identified by culture in the State Hygienic Laboratory with subsequent concurrence that such organism was the etiologic agent in the case. Obviously, there is no need to belabor the point that much underreporting exists, since many of the individuals harboring these bacteria are not sick and, of those who are ill, many do not seek medical assistance; finally, a large number of those seen by our colleagues are

never diagnosed, let alone reported, even when bacteriological identification has been made. It should be pointed out that counties showing no cases of enteric bacterial diseases merely had none reported. Multiple cases in a county suggest either more thorough study of diarrheal conditions, or better epidemiology following identification and report of a case or cases.

Typhoid fever is of sufficient importance that it has been the subject of previous articles and will perhaps be again soon since the surveillance of cases and carriers impinges greatly upon the time and effort of the public health staff. Needless to say, the carrier in one county may not have been identified by epidemiology of a case of typhoid fever in that county nor may it have been even the cause of a case or cases in that county since by modern transportation during the incubation period either the case or the carrier may travel to another city, county, state, or nation.



STATE BOARD OF HEALTH, Division of Communicable Disease Control



EDITORIAL

Exercise in Patients with Coronary Artery Disease

Alfred Kahn, Jr., M.D.

The patient who has had a myocardial infarction is warned against excessive exercise. To a certain extent this warning is empiric. A sound understanding of the physiology of the heart damaged by coronary artery disease would be of great help in intelligently planning the activity of this type of patient.

Messer, Levine, Wagman and Gorlin (Circulation, Volume 28, page 404, September, 1963) have reported on the effects of exercise on hearts damaged by coronary disease. In all they studied 19 patients with clinical coronary artery disease. They made cardiac output studies, performed electrocardiograms and catheterized the heart chambers, coronary sinuses, and lungs; selected chemical studies as lactate and pyrunate were determined.

Firstly, their studies showed that the total amount of oxygen used by the body was about the same in control and coronary artery cases whether at rest or exercising. Figures for the cardiac index and stroke index were lower at rest in the coronary artery cases than in controls; however, after exercise the percentage increase was about the same. For example, the cardiac index of coronary artery cases averaged 2.6 liters per minute per square meter at rest and increased with exercise to 3.7; whereas, the controls were 3.4 and 4.9 respectively. The systolic ejection rate was lower in coronary artery cases than the controls; the resting figures are 124 cc per second per square meter, as compared to 160 in controls; after the figures were 143 and 196.

The oxygen consumption of the myocardium of coronary artery cases did not differ at rest from the controls; after exercise the coronary artery cases showed a 61% higher oxygen usage by the myocardium. Pressure-time per oxygen consumed ratio showed a higher level at rest in coronary artery cases than in controls and after exercise the values for the coronary artery cases decreased as compared to an increase in controls.

The authors have included a highly interesting chart relating coronary venous oxygen saturation to coronary blood flow. This graphically shows that as the coronary artery case exercises, the coronary artery blood flow increases but the percentage of coronary venous oxygen saturation decreases. In controls the coronary venous saturation increases.

Messer, et al. point out in their discussion that although many cardiac performance measurements are similar in coronary artery cases and controls, at rest, the cardiac and stroke indices are reduced in the presence of disease; the amount of blood ejected per unit of time was less. This is thought to represent a "decreased rate of fiber shortening in the presence of normal or increased pressure generation".

Exercise, they point out, accentuates the differences in cardiac performance. Messer states that the systolic ejection rate does not increase in most subjects. Synchronism of cardiac muscle fiber shortening may be decidedly altered by fibrosis, etc. and thus decrease cardiac performance, especially after exercise.

It was pointed out that the patients with coronary artery disease resembled patients with heart failure in some respects despite the lack of overt evidence of such in the former. For example, "the

mechanical efficiency and the ratio of pressure-time to oxygen consumption did not increase in this group, in marked contrast to the response of control subjects. In contrast to the control response myocardial oxygen consumption per 100 gram rose proportionately more than pressure-time per minute and in close relationship to ventricular work".

The abnormal reactions of the heart of patients with coronary artery disease can be demonstrated in another way. In coronary artery patients due to poor mechanical efficiency and decreased contractility per unit of oxygen used, exercise produces a greater coronary artery blood flow than in normal patients, and yet this increased flow still is inadequate to meet the demands of the damaged heart.

The authors conclude that exercise causes extra demands on the coronary circulation, and this in turn aggravates a situation in which there is already an inadequacy.

ANSWER—Electrocardiogram of the Month

RATE: 65 RHYTHM: Normal Sinus

PR: .15 QRS: .08 QT: .38

ABNORMAL. Reversal of Right Arm-Left Arm lead wires. One premature atrial contraction and one premature ventricular contraction. Left ventricular hypertrophy.

COMMENT: This represents the most common technical error. The tracing can be interpreted by holding a mirror to Lead 1 and reversing designation of Leads II and III. Confirmation by repeat tracing, however, should always be secured.

ANSWER—What's Your Diagnosis?

No. 12-57-19 4 year-old female

DIAGNOSIS: Wilm's tumor, left kidney.

X-RAY FINDINGS: There is absence of intestinal gas in the entire left side of the abdomen due to the large kidney mass. The mass also elevated the left hemi-diaphragm and pushes the stomach air shadow to the right. One distorted kidney calyx can be seen above the crest of the ilium. No other calyces are seen.

MEDICINE IN THE NEWS

Report On Actions of the House of Delegates
American Medical Association
113th Annual Convention
June 21-25, 1964
San Francisco

SAN FRANCISCO, June 25—Tobacco and health, human rights, physician-hospital relations, continuing medical education, the cost of medical care, and federal subsidization of prepayment plans and health insurance companies were among the major subjects acted upon by the House of Delegates at the American Medical Association's 113th annual convention held June 21-25 in San Francisco.

Dr. Donovan F. Ward of Dubuque, Iowa, vice president of the Association, was named President-Elect of the Association. He will become President at the June, 1965, annual convention in New York City, succeeding Dr. Norman A. Welch of Boston, who was installed at the inaugural ceremony in San Francisco.

The AMA 1964 Distinguished Service Award was won by Dr. Irvine H. Page, director of research of the Cleveland Clinic, for his investigation of cardiac, vascular and renal disease.

Final registration figures reached a grand total of 49,437, including 14,229 physicians.

Tobacco and Health

The House approved a strong stand on tobacco and health by calling cigarette smoking "a serious health hazard". This action was taken after the reference committee on Public Health and Occupational Health considered 10 resolutions and a Board of Trustees report on the subject and heard considerable testimony.

In adopting a four-point reference committee report, the House said "the American Medical Association is on record and does recognize a significant relationship between cigarette smoking and the incidence of lung cancer and certain other diseases."

It urged that programs be developed to disseminate vital health education material on the hazards of smoking to all age groups through all means of communication. The House also recognized the contribution of the Surgeon General's Committee in its comprehensive report. And it emphasized that a joint committee of the AMA and the National Education Association already has adopted a resolution urging elementary and secondary schools to include programs on smoking and health in their health education curricula.

The House further recommended that the AMA pamphlet, "Smoking: Facts You Should Know," should be modified "in the light of accumulating knowledge."

Finally, the House said the delegates and the Board of Trustees "should take great pride in the establishment of the research program on tobacco and health that is being carried out by the AMA Education and Research Foundation."

In adopting the report of the AMA-ERF the House called attention to the following statement:

"The Board of Directors of AMA-ERF and the Board of Trustees of the AMA were clearly aware of the possibility of criticism in accepting this grant (10 million dollars from several tobacco companies). But against that possibility they weighed the potential benefits to the public who will continue to smoke and concluded that the risk was insignificant by comparison. The only hope of minimizing the hazards of smoking lies in research which points to the course that the AMA as well as others must take."

Human Rights

On the major issue of human rights the House declared itself "unalterably opposed to the denial of membership, privileges and responsibilities in county medical societies and state medical associations to any duly licensed physician because of race, color, religion, ethnic affiliation, or national origin."

This action was taken after the reference committee had heard a detailed discussion and had

considered four resolutions on the subject.

In addition, the House called "upon all state medical associations, all component societies, and all individual members of the AMA to exert every effort to end every instance in which such equal rights, privileges and responsibilities are denied."

The House also accepted a report from the Board on the liaison committees of the AMA and the National Medical Association. This report reviewed the history of the committees and noted that "great progress has been made voluntarily. More progress can reasonably be expected in the immediate future, especially if the committees are permitted to continue on a constructive, cooperative basis. This requires effort, but more importantly, good will and the desire to eliminate problems."

Physician-Hospital Relations

Conclusions and recommendations in a significant and extensive report on physician-hospital relations were adopted by the House. Prepared by the Council on Medical Service's Committee on Medical Facilities, the report stresses "the imperative need for the medical profession to assume responsibility for the quality, continuity, and availability of professional services and for the coordination of these services with the other essential supportive aspects of health care."

The report's recommendations are designed to serve as guidelines for physicians in meeting the problems involved in the changing patterns of care such as: appointment of salaried chiefs of staff; appointment of salaried heads of clinical departments; appointment of salaried directors of medical education; employment of salaried physicians for outpatient and emergency departments; use of salaried physicians to provide care ordinarily provided by interns and residents; and utilization of closed-panel prepayment medical care programs by hospitals.

The report also includes a review of the development of AMA's policy on physician-hospital relations, a study of the relation of policy to actual practice, and an investigation of the factors influencing change—including graduate education, medical finance, expansion of hospital functions and regulation of medical care.

Continuing Medical Education

Authorization was made by the House to establish an AMA-sponsored survey and accreditation program in continuing medical education. In the program attention will be concentrated on institutions and organizations offering courses rather than on individual courses, and appraisal of an institution's or organization's program will be carried out only at its request.

Eventually, approved institutions or organizations will be so designated in the Council's annual lists of "Continuing Education Courses for Physicians", and when all institutions which wish to list their courses have had the opportunity to be considered for approval, only courses of approved institutions and organizations will be included in the annual list. Programs will be surveyed by a Review Committee on Continuing Medical Education.

Cost of Medical Care

A four-volume report of the AMA Commission on the Cost of Medical Care was received by the delegates, and the House concurred with the Board of Trustees that the conclusions and recommendations of the Commission will be studied and a report will be made to the House for its consideration at the 1964 Clinical Convention.

The four volumes include a General Report on factors involved in medical care costs, a full report on "Professional Review Mechanisms", another on "Significant Medical Advances", and one on "Changing Patterns of Hospital Care".

In its report the Board said that the Commission "is aware that its efforts will not result in a magic reduction in the price of medical and hospital services. It does believe, however, that its study has produced a considerable amount of new and relevant information which will serve as a basis for better understanding by the public and the medical profession of this complex subject."

Reaffirmed the AMA policy favoring federal grants for "bricks and mortar"—funds for construction and renovation of medical schools, hospitals, related institutions, and mental health centers—but urged that the "advantages and desirability of multiple source financing be kept clearly in mind". The House also was informed by the Board that it is appointing a commission to conduct a broad study of the role of federal support of medical research.

Other Actions

—The House went on record as opposing federal subsidization of prepayment plans and health insurance companies, and it asked for an AMA study of the development of state programs which utilize prepayment plans or health insurance

companies in the implementation of state programs of medical aid to the aging under the Kerr-Mills law.

—A proposal to poll all AMA members concerning compulsory Social Security for self-employed physicians was rejected by the House. In addition, the House concurred with the reference committee in opposing polls of the membership on issues of "great or even moderate importance" because the House members express the majority sentiments of their constituents on all questions coming before the House.

—An expanded program on medical ethics was endorsed by the House. The program will be designed to educate physicians and the public on what medical ethics means to them and how medical ethics affects them. The Judicial Council, working with the Board of Trustees, will determine the means by which this expanded program is to be implemented.

—Approval was given to a change in the Bylaws to allow the House to set the hour and day of election of AMA officers at the Annual Convention. This was adopted early in the House session and made it possible to have the nominations on Wednesday afternoon and the elections on Thursday morning.

—A three-point communications program designed to improve the public relations position of the medical profession was endorsed by the House on recommendation of the AMA Committee on Communications. The program includes a redoubling of efforts by county and state societies, closer liaison with media personnel and prompt information to state societies on AMA news releases and testimony.

Miscellaneous Actions

In considering a wide variety of resolutions and reports, the House also:

Approved the creation of the Section on Allergy on recommendation of the Board of Trustees.

Approved a comprehensive inquiry of the causative factors for the sharp increase in syphilis and gonorrhea and urged the AMA to "take leadership in educational and research measures designed to control and eliminate syphilis".

Okayed a national conference on areawide planning of hospitals and related health facilities, to be sponsored under the auspices of the AMA.

Agreed to continue and broaden studies on the problems of unwed mothers, illegitimacy and other related matters and to develop positive preventive programs.

Supported a position statement on protecting children against physical abuse and called for legislative guidelines to the states relative to legislation on this matter.

Asked the Board of Trustees to investigate establishment of a wire communications system between AMA headquarters in Chicago and offices of state medical associations.

Referred to the Council on Medical Service a resolution condemning the practice by some hospitals of adopting constitutions which deny staff privileges to physicians not eligible or certified by specialty bodies or societies.

Agreed with the Board that a forum for representatives of national medical specialty societies and the American Academy of General Practice be held on Nov. 1, 1964, in Chicago.

Approved a resolution calling for the publication of the proposed nominees for standing committees (councils) of the House be submitted in advance of the Annual Convention, preferably in the House of Delegates Handbook.

Recommended that the Board of Trustees use the talents of Dr. Edward R. Annis, immediate past president, and other qualified spokesmen for medicine with appropriate remuneration.

Asked the Committee on Insurance and Prepayment Plans of the Council on Medical Service to consider a revision of simplified health insurance claims forms.

Recommended that the Board of Trustees approve the establishment of an ad hoc study on family practice as proposed by the Council on Medical Education.

Agreed with the change of name of the Council on Medical Education and Hospitals to the Council on Medical Education.

Requested clarification of the ethical and legal limitations of physicians participating in court-ordered, pre-trial psychiatric examinations.

Urged the AMA to continue its vigorous opposition to tax regulations discriminating against "professional associations" and "professional corporations", and its support of legislation which seeks to provide tax equality with business corporations for "professional associations" and "professional corporations".

Opening Session

Dr. Edward R. Annis of Miami, outgoing AMA president, told the special Sunday afternoon opening session that a greater effort is needed in the

areas of continuing medical education and health education programs. He also urged state and county medical associations to bolster their paid executive personnel to help carry out local, state and national projects. Doctor Annis called for an increase in AMA dues and later the House referred the question of a dues increase to the Board of Trustees for study and for a report at 1964 Clinical Meeting in Miami. Honored at the opening session were the presidents of state and territorial medical associations and a number of special AMA guests from national organizations.

At the Monday session awards announced were the AMA Scientific Achievement Award to Prof. Rene Jules Dubos, PhD, of the Rockefeller Institute, New York City, and the Joseph Goldberger Award in Clinical Nutrition to Dr. William J. Darby of Vanderbilt University School of Medicine, Nashville.

Inaugural Ceremony

Doctor Welch, in his inaugural address Tuesday night, said that medicine must be united if it is "to serve the public in the future to the high degree that it has in the past". He stressed that American physicians must be "standing strong and firm with a heart and a conscience tuned to public need, with a respect for the rights and privileges of the individual, and with an abiding faith in our free competitive system of medical practices."

In keeping with Doctor Welch's address, "Unity in Medicine", presidents or their representatives from 29 medical specialty organizations were honored guests at the ceremony.

The Distinguished Service Award was presented to Doctor Page and the Scientific Achievement Award was given to Doctor Darby.

Wednesday Session

Speaking at the Wednesday session, Doctor Welch pointed up the growing alliance between medicine and research—an alliance rooted in truth, knowledge and the freedom to search them out. He called these "the greatest assets available for human development and human well-being". Doctor Welch also enumerated the important projects of the AMA in the past year such as mental health, continuing medical education, tobacco and health, and AMA-ERF, the Institute of Biomedical Research.

Election of Officers

In addition to Doctor Ward, the new president-elect, the following officers were named:

Dr. Carlton Wertz of Buffalo, vice president; Dr. Milford O. Rouse of Dallas, speaker of the House, and Dr. Walter C. Bornemeier of Chicago, vice speaker.

Dr. Robert C. Long of Louisville was re-elected to the Board of Trustees for a three-year term, and Dr. Alvin J. Ingram of Memphis was elected to a three-year term. Doctor Ingram replaces Dr. R. B. Robins of Camden, Ark.

Nominated and elected to the Judicial Council was Dr. Charles C. Smeltzer of Knoxville, Tenn.

Named to the Council on Medical Education were Dr. William P. Longmire of Los Angeles, and Dr. William A. Sodeman of Philadelphia.

Elected to the Council on Medical Service was Dr. John Rumsey of San Diego, and re-elected was Dr. Willard A. Wright of Williston, N.D.

Dr. William A. Hyland of Grand Rapids, Mich. was re-elected to the Council on Constitution and Bylaws.

Dr. Robins Gets New Honor

Dr. R. B. Robins, Camden, Arkansas, who has had a long tenure of service in the American Medical Association in various positions, such as serving as Vice President in 1950, and then six years on the Board of Trustees, received a special appointment from the AMA Board of Trustees at its meeting Thursday in San Francisco as a member of the Council on Legislative Activities. This is a very important council which has to do with all national legislation involving health.

Research on Techniques to be Used in Outer Space

The University of Arkansas Graduate Institute of Technology and the Avco Corp. have entered into an agreement calling for the Institute to conduct research on techniques to be used in outer space. Under an $18,000 one-year contract, the GIT—in addition to other studies—will develop electron channel multipliers for the corporation's Tulsa Division.

New Course at University of Arkansas Graduate School

The University of Arkansas Graduate School at the Medical Center is accepting applicants for a new program leading to a master's degree in pharmaceutical science with a major in radiological health. The new course, which will be instituted in the fall term, is made possible by a grant

from the Health, Education and Welfare Department.

Dr. Joseph Now Certified in Radiology and Nuclear Medicine

Doctor Raymond F. Joseph of Little Rock recently passed examination by Board of Radiology to become certified in Radiology and Nuclear Medicine.

Arkansas Breakfast at AMA in San Francisco Big Success

The seventh annual and most successful of all Arkansas breakfasts given at the AMA annual conventions was held in the Gold Room of the Fairmont Hotel in San Francisco Monday morning, June 22nd with around 400 people in attendance. This breakfast has become a tradition, because it is the opening event of this meeting which is called "the greatest medical show on earth" each year. It has become one of the most outstanding public relations affairs for the State of Arkansas that is held in the country. It is given in honor of the officers and members of the House of Delegates of the American Medical Association.

MISS AMERICA (Donna Axum of El Dorado, Arkansas) flew to San Francisco especially to be present on this occasion. Mr. Al Marks, President of The Miss America Pageant, Inc., of Atlantic City, New Jersey accompanied Donna and her chaperone for the occasion. Donna made a great hit with the doctors by the marvelous address which she gave.

The featured speaker at the breakfast was former Congressman (Dr.) Walter Judd of Minnesota who gave one of the most outstanding addresses at the AMA meeting entitled "The Doctor's Place in Public Affairs". Dr. Judd served ten years as a medical missionary in China and later twenty years in Congress. He is a recognized authority on U.S. Foreign Policy and was known in Congress as one of its most popular members.

The Month In Washington

Washington, D.C. — The House Ways and Means Committee handed the Administration a defeat by refusing to act this year on the controversial King-Anderson plan for a compulsory



There's a great deal to be said for rising early when one has MISS AMERICA of 1964—Donna Axum of El Dorado, Arkansas—as a breakfast guest. Welcoming her to the Arkansas Medical Society Breakfast in the Fairmont Hotel in San Francisco Monday morning, June 22 were (l-r) former Congressman (Dr.) Walter H. Judd, Minneapolis; Dr. Edward R. Annis, Miami, Fla., AMA President and Dr. R. B. Robins, Camden, Ark., AMA Trustee.



Greeting the guests at the annual breakfast of the Arkansas Medical Society Monday in the Fairmont was Dr. Randolph Ellis, state society president.

social security hospital-medical program for the aged.

However, King-Anderson supporters expressed the hope the Senate would add the proposal to a flat social security cash benefit and tax increase bill adopted by the Ways and Means panel.

Rep. Cecil King (D., Calif.), a committee member and a sponsor of the King-Anderson bill, conceded the bill did not have enough votes to pass in committee. "I don't want ever to have an adverse vote," he told reporters.

In addition to blocking King-Anderson, the Ways and Means Committee decided to take no action on proposed changes in the Kerr-Mills program of federal aid to states for health care benefits for the elderly who need financial assistance to pay hospital and medical bills.

The five per cent boost in the current maximum $127 monthly payment for retired social security beneficiaries would be the first social security cash increase in six years. It is designed to keep the pension payments abreast of the cost of living. The increased benefit would be financed by a tax rise that, in addition to already-slated tax boosts, would bring the social security levy by 1971 to 4.8 per cent paid by both worker and employer on the first $5,400 of salary. Present tax is 3.625 per cent on $4,800. The benefits would add up to an extra $1 billion a year.

The first motion before the committee was to increase benefits by six per cent, but Rep. King urged the King-Anderson supporters on the Democratic side of the panel to oppose this on grounds it would bring the social security tax so high it would be difficult to attach King-Anderson and even higher taxes to social security.

Other social security changes in the legislation would:

Extend social security to an estimated 150,000 self-employed physicians.

Allow widows to receive benefits at age 60 instead of 62 with a slight cut in payments.

Continue payments to widows with dependent children in school until the children reach age 22 instead of 18.

Commenting on the Ways and Means action, Dr. Norman A. Welch, president of the American Medical Association, declared the committee "acted wisely and responsibly" in refusing to approve the King-Anderson bill.

In a statement, he declared:

"We are confident that this decision is in keeping with the attitude of the majority of the American people toward this legislation, as reflected in numerous surveys by members of Congress and by private opinion sampling organizations."

Dr. Welch said, "we have opposed King-Anderson legislation because it would force heavy payroll tax increases on the nation's workers and their employers to provide hospitalization benefits indiscriminately to all the elderly, the wealthy and the well-to-do included".

The drug industry decided to challenge in court the controversial Food and Drug Administration regulation requiring drug makers to produce proof of efficacy for virtually all new drugs approved since 1938, in addition to other provisions.

The industry has argued that Congress intended for the law to apply only to new drugs since enactment of the legislation. The FDA asserted that "what Congress intended was a comprehensive review of all drugs now on the market as a result of new drug clearance."

The American Medical Association recommended that retired military personnel receive health care benefits under a contributory private health insurance plan similar to that now in oper-

ation for civilian Federal workers.

Dr. Reuben A. Benson, chairman of the AMA Council on National Security, told a House Armed Services Subcommittee that by 1980 it is estimated that the number of retired military will reach 4,397,000. "Any health care program devised or conceived must be sufficiently elastic and effective to adjust to these demands," he noted.

He said the AMA recommends the adoption of a plan patterned after the Federal Employes Health Benefits Program. "It is the AMA's opinion that to the maximum extent possible, this care should be provided by civilian physicians in civilian facilities," Dr. Benson testified. "The Association, however, recognizes that the retiree and his dependents may be authorized the use of military facilities but recommends that such use be limited to present military facilities on a space-available basis."

The American Medical Association asked Congress to reject proposals that would reimburse qualified Federal workers for chiropractic treatment under the Federal Employes Compensation Act.

In a letter to a Senate Labor Subcommittee, Dr. F. J. L. Blasingame, AMA executive vice president, declared that chiropractic is not based on sound scientific principles.

THINGS TO COME



Current Practical Aspects of Cardiovascular Diseases

The Division of Continuing Education of The University of Texas Graduate School of Biomedical Sciences at Houston and the Frederick R. Lummis Medical Foundation will present a one-day symposium, "Current Practical Aspects of Cardiovascular Diseases", on Saturday, October 31, 1964, in the Texas Medical Center in Houston.

Recent Advances in Cardiovascular Disease

The Division of Continuing Education of the University of Texas Graduate School of Biochemical Sciences at Houston will present a course on "Recent Advances in Cardiovascular Diseases", on December 7, 8 and 9, 1964, in the Texas Medical Center, Houston, Texas. Dr. Victor A. McKusick, Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland, will discuss genetics, heritable disorders of connective tissue and cardiovascular sounds and murmurs.

For further information write: Division of Continuing Education, The University of Texas Graduate School of Biochemical Sciences at Houston, 102 Jesse Jones Library Building, Texas Medical Center, Houston, Texas, 77025.

Gerontological Society's Seventeenth Annual Meeting

A symposium on "Endocrines and Aging" will be one highlight of the Gerontological Society's seventeenth annual meeting at the Leamington Hotel, Minneapolis, Minn., October 29 to 31. Dr. Leo Gitman of New York City, society president, will chair the symposium; 14 speakers in a comprehensive study of endocrine function in elderly patients will be presented.

13th Hahnemann Symposium

The 13th Hahnemann Symposium will be held in Philadelphia, December 14-16, 1964, on the subject of "The Stomach: (Including Related Areas in Esophagus and Duodenum.)" The purpose of this meeting is to present developments in the normal and abnormal physiology of the stomach with particular reference to peptic ulcer disease.

Internists to Hold Fall Meeting in Los Angeles

The Second Annual Fall Meeting of the American College of Physicians will be held October 8-10 at the Hotel Biltmore in Los Angeles, California. It will be the second major scientific meeting this year for the medical specialty society.



PERSONAL AND NEWS ITEMS

Tribute to Dr. J. G. Gladden

The following poem was written by Mr. E. A. Nicholson, Harrison, Arkansas, and read at a banquet for Dr. Gladden:

FOR MY FRIEND, DR. GLADDEN

They say there's no sickness in heaven,
But if not we will miss something there:
The hands of our loving old doctor,
With his smiles and his pills and his care.
How he used to come when we called him,
No matter how stormy or late!
How we waited and worried and listened,
'Til we heard him turn in at the gate!

And somehow we knew we were better,
But we wondered what he could hear
When he took the thermometer out of our mouth,
And put those things in his ear;
And felt our pulse and listened
To places all over our chest,
But we didn't remonstrate or argue,
We'd been taught that "The doctor knows best!"

And I hope when my life here is over,
And I come to the end of the fight,
I can still have my old family doctor
To say "Things will come out all right."
And I'll put all my cares on his shoulders,
And he'll shoot some stuff in my arm,
And I'll trust him completely as always,
With no questions and no thought of harm.

I'll just go to sleep like a baby,
With never a worry or care.
I'll not even ask what my bill is,
I'll just try to repay him up there.
I know he won't be unemployed
In that land where men get what they're worth,
He could spend all his days hearing folks sing his praise,
For what he did for them on earth.

E. A. Nicholson, 7-17-64

SUPPLEMENTAL LISTING
COMMITTEES
ARKANSAS MEDICAL SOCIETY
1964-1965

COMMITTEE ON MEDICAL LEGISLATION

	Term Expires:
J. P. Ellis, 430 South West Avenue, El Dorado	1965
Morriss M. Henry, 35 North Block, Fayetteville	1965
John W. Smith, 1415 West 6th, Little Rock	1965
H. Elvin Shuffield, 1000 Wolfe, Little Rock, *CHAIRMAN*	1966
Gilbert D. Jay, 200 South Rhodes, West Memphis	1966
Karlton Kemp, 408 Hazel, Texarkana	1966
John Wood, Mena	1967
Paul Wallick, Monticello	1967
C. A. Archer, Jr., Conway	1967

SUB-COMMITTEE ON AGING

Lon E. Reed, 1315 Central, Hot Springs	1965
Wm. H. Mock, Prairie Grove	1965
James M. Kolb, Sr., Clarksville	1966
Joe H. Hardin, 500 South University, Little Rock	1966
Charles F. Wilkins, 511 West Main, Russellville, *CHAIRMAN*	1967
Paul G. Henley, 700 West Faulkner, El Dorado	1967

POLIO ADVISORY SUB-COMMITTEE

Henry B. Rogers, 516 West Faulkner, El Dorado	1965
Roger B. Bost, 1400 South "D", Fort Smith, *CHAIRMAN*	1965
T. E. Townsend, 1310 Cherry, Pine Bluff	1966
C. E. Kemp, Jonesboro	1966
W. W. Workman, 526 North 6th, Blytheville	1967
Harry Hayes, Jr., Donaghey Building, Little Rock	1967

COMMITTEE ON INSURANCE

Curtis Clark, Sheridan	1965
Stanley Applegate, Springdale	1965
Guy R. Farris, 810 West 2nd, Little Rock	1966
Russell W. Cobb, Malvern	1966
Thomas D. Honeycutt, 509 Cross, Little Rock, *CHAIRMAN*	1967
Howard Monroe, Mountain View	1967

RESOLUTIONS



WHEREAS, the recent death of Dr. Luther D. Reagan, a member of this Society for more than 50 years, and

WHEREAS, Dr. Reagan was held in high esteem by others in the profession, by his patients, and by the community, and

WHEREAS, in order to express our sense of grief of his passing,

BE IT THEREFORE RESOLVED:

THAT the Pulaski County Medical Society take this means to express our sympathy to his wife and family, and

THAT we shall cause a copy of this resolution to be published in the Journal of the Arkansas Medical Society, and

THAT a copy of this resolution be sent to his wife and

THAT a copy of this resolution be made a part of the permanent records of the Society.

Read and Approved by
The Executive Committee
John E. Greutter, M.D., Chairman
Memorials Committee

July 15, 1964

WHEREAS, the recent death of Dr. Barton Arthur Rhinehart, a member of the Pulaski County Medical Society since 1923, and a past president of the Arkansas Medical Society, has caused his colleagues to pause with respect, and

WHEREAS, Dr. Rhinehart was highly respected and revered by those members of the Society who were his former students and by all of the members who had occasion to be associated with him, and

WHEREAS, he will be greatly missed by his friends in the community and his family,

BE IT THEREFORE RESOLVED:

THAT, the Pulaski County Medical Society shall express its sympathy and extend its condolences to the members of his family, and

THAT, a copy of this resolution be forwarded to the Journal of the Arkansas Medical Society for publication, and

THAT, a copy of this resolution be sent to the family of Dr. Rhinehart, and

THAT, a copy of this resolution shall be made a part of the permanent records of the Society.

Read Before and Approved by
The Executive Committee
John E. Greutter, M.D., Chairman
Memorials Committee

July 15, 1964

WHEREAS, the Members of the Pulaski County Medical Society, in noting the recent death of Dr. Charles Everett Oates are greatly saddened at this loss of a colleague, and

WHEREAS, Dr. Oates has been a member of this Society for 50 years and a life-time resident of our State, and

WHEREAS, twenty years of his professional career were spent in the teaching of medicine in Arkansas,

BE IT THEREFORE RESOLVED:

THAT, the Members of the Pulaski County Medical Society express to Mrs. Oates its sense of loss and of sympathy to her, and

THAT, a copy of this resolution be forwarded to the Journal of the Arkansas Medical Society for publication, and

THAT, a copy of this resolution be sent to Mrs. Oates, and

THAT, a copy of this resolution be made a part of the permanent records of the Society.

Read Before and Approved by
The Executive Committee
John E. Greutter, M.D., Chairman
Memorials Committee

July 15, 1964

WHEREAS, in order to express our sense of loss and sadness of the recent death of Dr. Ewell Irving Thompson, and

WHEREAS, Dr. Thompson was a member of the Pulaski County Medical Society for thirty-one years, and

WHEREAS, he was held in high esteem by his fellow-physicians, his patients and his community,

BE IT THEREFORE RESOLVED:

THAT we express our sense of loss and sadness to his family, and

THAT we submit for publication a copy of this resolution to the Journal of the Arkansas Medical Society, and

THAT we forward a copy of this resolution to Mrs. Thompson, and

THAT a copy of this resolution shall become a part of the permanent records of the Society.

Read Before and Approved by
The Executive Committee
John E. Greutter, M.D., Chairman
Memorials Committee

July 15, 1964



BOOK REVIEWS

CASE STUDIES IN OBSTETRICS AND GYNECOLOGY, by F. Jackson Stoddard, M.D., Associate Clinical Professor of Obstetrics and Gynecology, Marquette University School of Medicine, Milwaukee, Wisconsin, illustrated, pp. 312, published by W. B. Saunders Company, Philadelphia and London, 1964.

This is a textbook which emphasizes teaching through the use of case reports. This is followed by a discussion and certain leading questions which are answered in the text. This book is of value to the medical student, internist and general physician.

AK

LYSOSOMES, a Ciba Foundation Symposium, Edited by A. V. S. de Reuck, M.Sc., D.I.C., A.R.C.S. and Margaret P. Cameron, M.A., pp. 446, illustrated, published by Little, Brown and Company, Boston, Massachusetts, 1963.

This is an excellent book for those interested in research, bio-chemistry and cytology, and to them it is highly recommended. It is of limited interest to the practicing physician.

AK

MEDICAL LABORATORY TECHNOLOGY, By Matthew J. Lynce, M.D. (N.U.I.), M.R.C.P. (Lond.), F.C.A.P. Pathologist, The General Hospital, The Sundbury Memorial Hospital, The Sundbury-Algoma Sanatorium, Sundbury, Ontario, Consultant Pathologist to the International Nickel Company of Canada. Regional Pathologist for District of Sundbury, Ontario, Department of Justice. Stanley S. Raphael, M.D., B.S. (Lond.) Pathologist, the Sudbury Memorial Hospital, Sudbury, Ontario, Canada, Leslie D. Mellor, L.C.S.L.T., F.I.M.L.T., Member Canadian Society for Clinical Chemistry. Chief Technologist, and Specialist Technologist in Biochemistry, The General Hospital, Sudbury, Ontario, Canada. Peter D. Spare, F.I.M.L.T., Member, Canadian Society for Clinical Chemistry. Chief Technologist, and Specialist Technologist in Biochemistry, Sudbury Memorial Hospital. Peter Hills, L.C.S.L.T., F.R.M.S. Senior Technologist, and Specialist Technologist in Bacteriology and Histology, The General Hospital, Sudbury, Ontario, Canada. Martin J. H. Inwood, L.C.S.L.T., F.I.M.L.T., Senior Technologist, and Specialist Technologist in Hematology and Blood Bank, The General Hospital, Sudbury, Ontario, Canada, Member, American Association of Blood Banks. pp. 735, illustrated, published by W. B. Sanders Company, Philadelphia and London, 1963.

This is a rather complete text in the field of Laboratory Technology. It is up to date and perhaps this is the most cogent reason for printing it. It does not really add anything new to the field. Other texts on this subject cover approximately the same material. It is printed in a style resembling the type from a good typewriter rather than conventional print; this in no way detracts from the text. The book includes information on technique, for example; venipuncture is discussed. Terms which might be unknown to the readers are defined. There are many illustrations where necessary to make the text more understandable. In many instances the text are listed in cookbook fashion which makes the performance of the task easy for the novice.

This is a good book on Medical Laboratory Technology and is recommended as being a suitable text book for Medical students, interns and general physicians.

AK



Reduced Urinary Estrogen Excretion Associated With Low Serum Folic Acid Activity in Pregnancy

J. D. Martin, R. E. Davis, and R. Hahnel (Department of Obstetrics and Gynaecology, University of Western Australia, Perth, Australia), *Lancet* 1:1075 (May 16) 1964

The authors had previously observed an association between low urinary estrone excretion and reduced serum folic acid activity in pregnancy. This paper presents their final results. The urinary estrogens were measured by the method of Brown (1960) and the serum folic acid activity by the method of Davis and Kelly (1962). Data were collceted from 72 patients. The excretion of urinary estrone was significantly associated with reduced serum folic acid activity at the 99.9% accuracy level. When all cases with reduced urinary estrone, urinary estrone plus estriol, or urinary estrone plus estriol and estradiol 17 β excretion were considered, and compared with the normal cases, the serum folic acid activity was found to be significantly reduced at the 96% accuracy level.

TUBERCULOSIS  ABSTRACTS

Sponsored by Arkansas Tuberculosis Association

EFFECTS OF MEASLES AND MEASLES VACCINE ON THE TUBERCULIN TEST

Tuberculous children with measles, measles modified by gamma globulin, or vaccinated against measles had a depressed reaction to the tuberculin test, raising the question whether the vaccine may have a deleterious effect on undetected childhood tuberculosis.

Twenty-two tuberculous children in whom typical measles developed in the spring of 1962 were studied at Kings County Hospital Center. Seven were admitted with measles and found to have tuberculosis. Measles developed in 15 tuberculous children in the hospital, 8 of these being modified by gamma globulin. The measles was mild to moderate in all the children, with complications in only two—a pneumonia and a mild encephalitis.

In addition to these 22 children, two separate groups of tuberculous children were given live measles vaccine and studied in similar fashion. Group 1 consisted of 14 children who were exposed to a child with measles prodromes and given 1 ml. of live measles vaccine two days later along with gamma globulin, 0.2 ml. per pound of body weight. Group 2 consisted of 10 children without exposure to measles who were given live vaccine without gamma globulin. Nine of the children in Group 1 and 6 of those in Group 2 had clinical and laboratory evidence of vaccine measles. Each had signficant antibody-titer changes.

All the children were given isoniazid and para-aminosalicylic acid (PAS) throughout the period of the study, which for each child was about a year.

All children were tested on the forearm every two or three days with freshly prepared PPD. Readings were made at 48 hours and recorded as the average diameter of induration. The criterion for a positive reaction was induration over 5 mm. in average diameter.

DEPRESSED REACTIONS

Measles unmodified by gamma globulin was present in 14 of the 22 children with tuberculosis and measles. Seven were admitted to the hospital with measles, and measles developed in 7 during the hospital stay. Twelve of 13 children tested between the fifth and ninth day after the onset of rash showed negative reactions to tuberculin. From the tenth through the fifteenth day only 2 tuberculin tests of 8 were negative, and from the sixteenth through the twentieth none of 4 readings was negative. The average length of time before the tuberculin test turned positive was 18 days. One reaction was negative 42 days after the appearance of the measles rash.

In the 8 tuberculous children in the hospital who were exposed to measles and contracted gamma-globulin-modified measles, the tuberculin reaction became negative 12 to 22 days before the rash. Beginning with the fifth day after the appearance of rash, positive readings developed. The average interval before the tuberculin test turned positive was 17 days.

Among the children in Group 1, 6 of 14 with no exposure to regular measles were given live-virus vaccine and contracted definite vaccine measles. These children showed variable depression of the tuberculin test, but in most the change was of shorter duration and of lesser degree than in natural measles or gamma-globulin-modified measles.

In addition, 9 of the 10 children in Group 2 were exposed to wild measles and given live vaccine with gamma globulin separately. All but 1 showed depressed tuberculin tests. In these children the combined effect of vaccine measles and incubating measles on the tuberculin test cannot be ruled out.

NO INCREASED PPD SENSITIVITY

At no time, in any of the children studied, was a distinctly increased tuberculin sensitivity

Saul Starr, M.D., and Sumner Berkovich, M.D.; *The New England Journal of Medicine,* February 20, 1964.



The Doctor's Visit, Jan Steen 1626-1679, Mauritshuis, The Hague

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1. Welch, C. E., Diverticula of the Alimentary Tract, in Conn, H. (editor): Current Therapy—1961, Philadelphia, W. B. Saunders Company, 1961, pp. 224-225.

SEARLE

Research in the Service of Medicine

found in the incubation period. The tuberculin reaction was diminished in at least half of the readings in the incubation period of gamma-globulin-modified measles.

There was little difference in the tuberculin-test changes with regular and gamma-globulin-modified measles. The uniform depression of the tuberculin reaction in the first four days with rash and the appearance of a few positive skin tests in the next five days was confirmed. In both groups the interval during which the more dilute tuberculin tests were negative or depressed averaged about 17 days.

Since the depressed reaction to PPD during measles returned to its previous levels in all but 2 cases, we believe that desensitization from repeated testing was not a major factor.

Of the diseases that depress the tuberculin reaction, measles does so more uniformly and more strongly than any other. Any explanation of this effect must include the action of measles virus in the incubation period and for a period of weeks after full recovery. Fever and toxicity are obviously not the cause of the change in sensitivity. Since the tuberculin sensitivity may be depressed even when there is no rash, the exanthem of measles is not the critical factor.

The only children given measles vaccine who showed depression of tuberculin sensitivity were those in whom vaccines measles with evidence of increased antibody titer developed. Gamma globulin alone caused no such change.

POSSIBLE EXPLANATION

It has been reported that early in the incubation period of measles lymphoid tissue throughout the body may be hyperplastic, and multinucleated giant cells are found in lymph nodes, tonsils, and adenoids, spleen and appendix. These cells are seen as early as five days after exposure to infection and appear to arise from lymphocytes. Since the measles virus produces such changes in lymphoid tissue and since the lymphocyte seems to be the cell involved in delayed sensitivity, one possible interference with tuberculin sensitivity may be a direct action of the virus on this function of the lymphocyte.

Another factor that must be considered is that the measles virus may cause an increased production of an anti-inflammatory steroid, which would then cause a depressed tuberculin reaction. This possibility requires attention because of the striking coincidence that measles can cause remission of nephrosis, can cause detrimental effects on the course of tuberculosis, and can depress tuberculin sensitivity. Furthermore, measles rarely causes asthmatic symptoms to flare up in children with recurrent asthma.

The relation of the changes in tuberculin allergy during measles to the possible deleterious effect of measles on the course of tuberculosis is only conjecture. Since vaccine measles in our cases depressed the tuberculin reaction, vaccine measles may also have deleterious effects in certain undetected and untreated cases of childhood tuberculosis.



A Norepinephrine Secreting Glomus Jugulare Tumor Presenting as a Pheochromocytoma

W. W. Duke et al (North Carolina Memorial Hosp, Chapel Hill), *Ann Intern Med* 60:1040 (June) 1964

Tumors of the glomus jugulare have been known since 1945. The patient presented is the first reported instance of a glomus jugulare tumor which secreted large amounts of norepinephrine (arterenol). The patient, a 33-year-old white woman, had had symptoms of a pheochromocytoma since 1959. Pharmacological tests and urinary assays for vanillylmandelic acid confirmed the presence of a catecholamine secreting tumor. Thoracotomy and two laparotomies failed to reveal the tumor. Catheterization of the vena cavae and internal jugular veins localized norepinephrine production to the right jugular vein. At operation a glomus jugulare tumor, containing 14.1 mg of norepinephrine per gram of tissue, was partially removed. Subsequently the tumor was irradiated, but continued to function at five months following operation. The clinical features of glomus jugulare tumors are discussed. The debate concerning the embryologic origin of glomic tissue is reviewed. The conditions comprising the neurocutaneous syndromes are mentioned in relation to glomic tissue. Kohn's hypothesis of glomic tissue origin from neural crest receives support from these observations. Tentatively, inclusion of glomic tissue tumors into the syndromes of neuroectodermal dysplasia seems plausible.

October, 1964

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Vol. 61 No. 5

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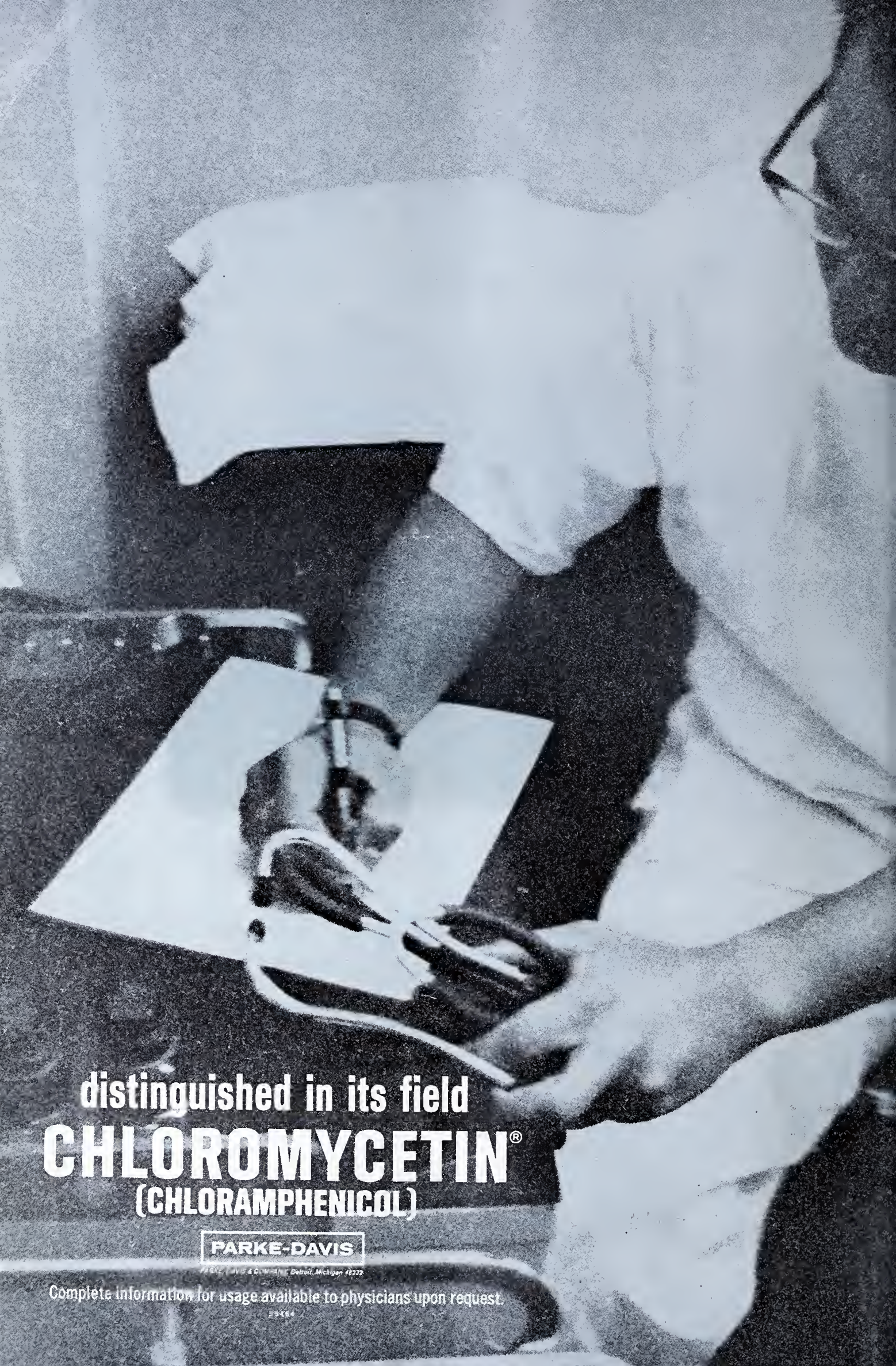
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By DAVID V. BATES, M.D., (Cantab.), M.R.C.P. (London), Associate Professor of Medicine, McGill University; Director, Respiratory Division, Joint Cardiorespiratory Service, Royal Victoria Hospital and Montreal Children's Hospital; and RONALD V. CHRISTIE, M.D. (Edinburgh), M.Sc. (McGill), B.Sc. (London), Sc.D. (Dublin), F.A.C.P., F.R.C.P. (London), F.R.C.P. (C), Professor and Chairman of the Department of Medicine, McGill University; Physician-in-Chief, Royal Victoria Hospital. With the assistance of MARGARET E. BECKLAKE, RICHARD E. DONEVAN, ROBERT G. FRASER, J. A. PETER PARE, W. M. THURLBECK. About 560 pages, 7″ x 10″, illustrated. About $15.00.
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Role of the Urologist in the Ferreting Out and Management Of Urologic Disease in Children*

Ormond S. Culp, M.D.**

Urologists rarely see pediatric problems initially. Children usually are referred for urologic investigation because of some alarming or puzzling anatomic discovery, refractive urinary findings, peculiar pain, unexplained fever, abnormality of micturition, or as part of a searching expedition.

Today's Urologist

The ogre of yesteryear with heavy hand, brute force and oversized instruments has been replaced. The modern urologist is especially conscious of and concerned about the many urologic enigmas of infancy and childhood. He has explored new vistas of basic research, notably those pertaining to physiology, and has evolved surgical technics adaptable to patients of all ages.

Urologists today are particularly aware of the fact that small urethras do not accommodate large instruments and that ill-advised urethral trauma has created many urologic cripples. Despite new, diminutive, efficient, diagnostic tools, instrumentation still demands considerable clinical judgment and personal experience. Urologists rarely resort to cystoscopy as an early diagnostic effort in pediatric problems.

Diagnostic Methods

The importance of thorough examination of the patient and of the urine has been stressed already and cannot be overemphasized. *Watching* the patient urinate also can be invaluable. Descriptions by parents are not always reliable.

Excretory urography is seldom contraindicated, especially in children. It should precede more elaborate studies. Films should be reviewed as they are developed to assure maximal usefulness and minimal radiation. Intramuscular injection of the contrast medium can be most rewarding when the intravenous route is impractical.

Retrograde urethrography and cystography are the most informative procedures that can be employed in very young patients. Delayed and voiding films should be included.

Cineradiography has become an amazing adjunct. It has revealed ureteral reflux that was not discernible by other methods as well as some astonishing details of micturition. Cine equipment is expensive and temperamental. Results of these studies often are controversial. Even though this method of investigation may be confined to medical centers, it should be employed in all perplexing and complicated situations.

Superfluous catheterization must be condemned. Residual urine is truly significant in most cases but it usually can be determined during cystography, cinefluoroscopy or cystoscopy and should not be determined initially or indiscriminately.

Only 50 per cent of pediatric urologic problems are analyzed to everyone's satisfaction despite the gamut of tests and procedures. Clinical extremes remain clearly defined. Many of the perplexing gray zones will be eliminated if children have complete urologic study *during* or soon after their *first* attacks.

Common Urologic Problems

Time precludes adequate consideration of all of the common urologic troubles in children. Obstruction and stasis are the most lethal and most elusive hazards. This portion of the presentation will be a hasty trip over the troublesome falls, reefs and rapids of the human waterways between the urethral meatus and the renal cortex.

Meatal stenosis is common. It usually can be

* Part of a panel presented at the annual meeting of the Arkansas Medical Society, Hot Springs, Arkansas, May 4, 1964.

**Section of Urology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota.

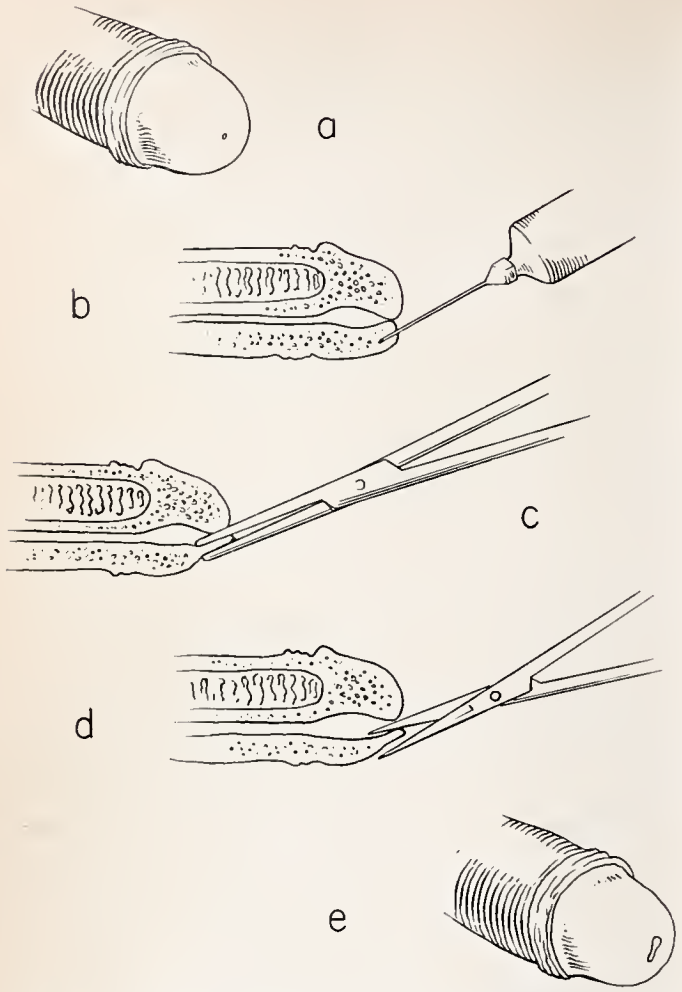


Fig. 1. Technic of meatotomy. Constricted meatus *(a)* infiltrated ventrally *(b)* with anesthetic agent, compressed with hemostat *(c)* incised with scissors *(d)* and thereby enlarged *(e)*.

detected by a pinpoint opening or a poor stream. Figure 1 shows a simple type of meatotomy that can be performed at any age under local anesthesia.

If relief is not prompt, deeper stricture must be suspected. It can be disastrous (fig. 2*a*). Retrograde urethrography is usually diagnostic. Prompt treatment is imperative.

When dealing with severe degrees of hypospadias or ambiguous external genitalia it is important to remember that a true or vestigial vagina may open into the posterior urethra and harbor infection. Small ones usually can be ignored; but large recesses, as shown in figure 2*b*, invariably must be excised.

Patients with imperforate anus frequently have rectourethral fistulas opening into the posterior male urethra. Beware of other associated urologic anomalies! A teen-aged male had three previous unsuccessful attempts to close his congenital rectourethral fistula (fig. 3) because the ureter draining the upper segment of a left unilateral fused kidney had an ectopic orifice adjacent to the fistula. Once this renal segment was excised the fistula was closed easily.

Epispadias can be one of the most deceiving external genital defects. Almost 50 per cent of these patients have some degree of urinary incontinence. Too frequently the epispadias is corrected before control has been evaluated. Cystoscopy should precede any plastic procedure on the penis. When the verumontanum is literally inside the cavity of the bladder and there is no semblance of vesical neck, one should be constructed before

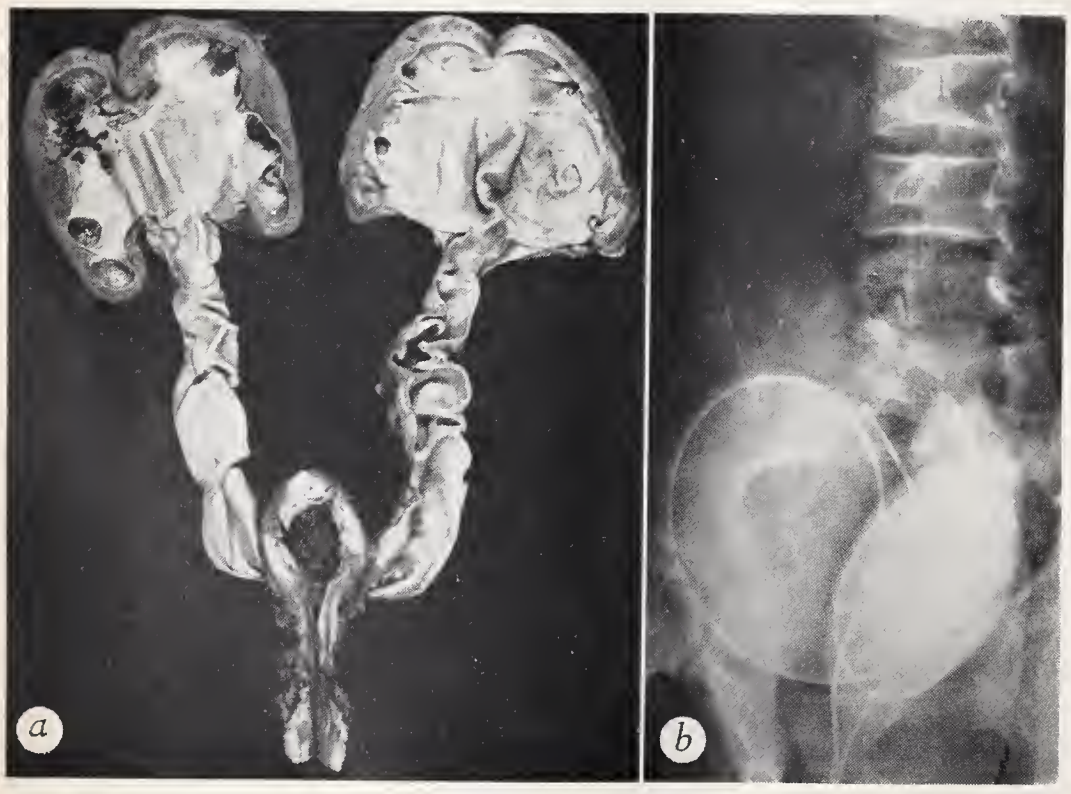


Fig. 2. *a*. Postmortem specimen showing marked hypertrophy of bladder wall, severe hydronephrosis and almost complete destruction of renal cortex secondary to urethral stricture. *b*. Retrograde cystogram and vaginogram. Vagina (on right) opened into posterior urethra.

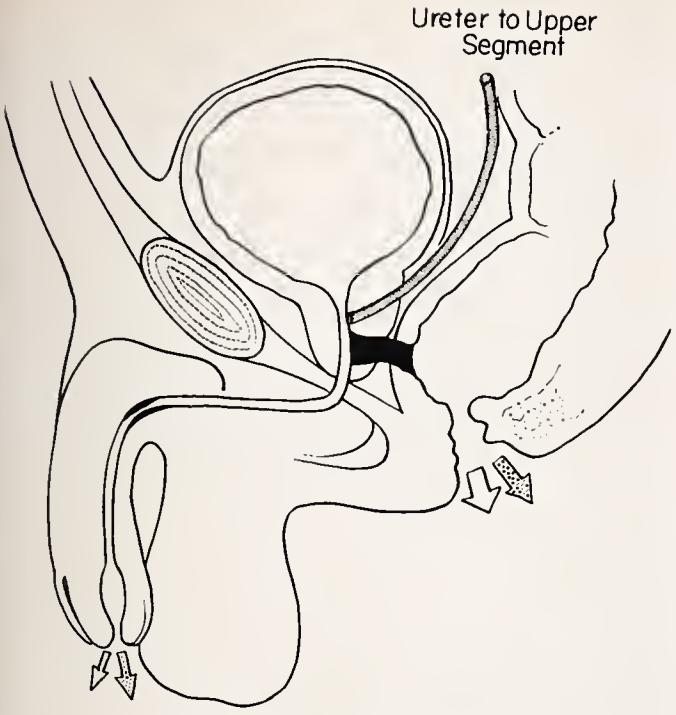


Fig. 3. Schematic reproduction of congenital rectourethral fistula with ectopic ureteral orifice adjacent to defect in prostatic urethra.

any efforts are directed to the external deformity.

The most catastrophic posterior urethral lesions are congenital valves (fig. 4*a*). Several types have been reported. Retrograde cystourethrography usually provides the diagnostic clue (fig. 4*b*). Treatment may be transurethral or retropubic but it must be timely.

Congenital obstruction of the vesical neck is notoriously common and elusive. It may be mechanical or physiologic. Cystoscopic inspection is not always diagnostic. Trabeculation of the bladder and the presence of residual urine are notably suggestive. Retrograde cystourethrography may be helpful. Cine studies also have been especially revealing. Transurethral resection has sufficed in many instances. Plastic operations on the vesical neck have gained popularity but late results have revealed an increasing incidence of retrograde ejaculation.

Anomalies of the anterior abdominal wall (commonly known as "prune bellies") always have some degree of vesical neck obstruction and bilateral cryptorchism. The threat to the upper urinary tract demands prompt drainage and should have priority over all other therapy.

Contracture of the vesical outlet may or may not be accompanied by ureteral reflux (fig. 5*a*). There is no reliable formula regarding when and how to reimplant ureters, but revision is imperative when a kidney seems to be deteriorating.

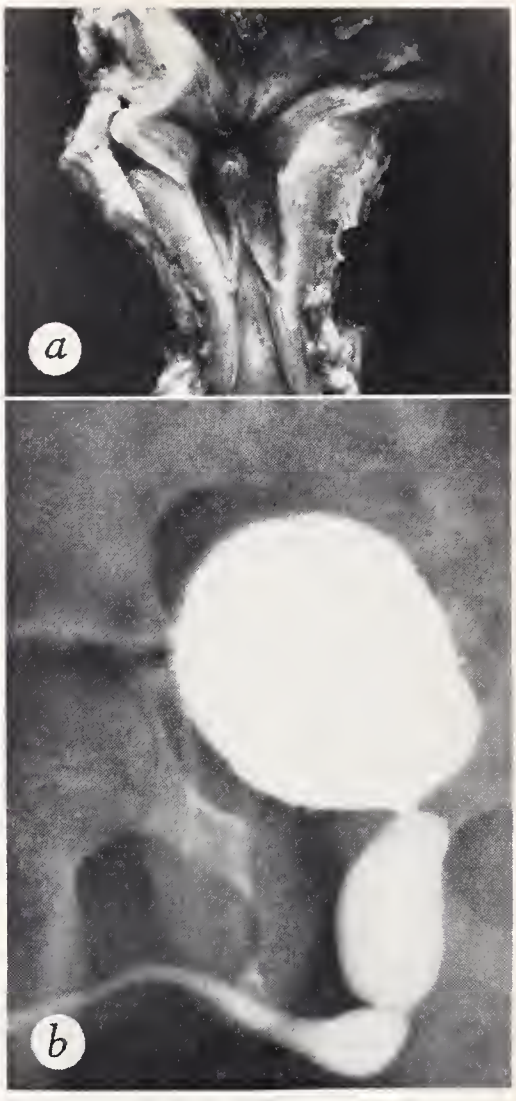


Fig. 4. *a*. Photograph of congenital valves in prostatic urethra. *b*. Retrograde cystourethrogram showing obstruction due to urethral valves.

Ureteroneocystostomy seems even more rational prior to renal damage. The Leadbetter technic has been the most dependable in the author's experience.

Ureterovesical obstruction rather than reflux may be responsible for ureterectasis (fig. 5*b*). Often it is associated with obstruction of the vesical neck. Too frequently the vesical neck is treated and the ureterovesical component is ignored. Reimplantation is essential. Straightening and reducing the caliber of the ureter have minor importance. The extravesical approach with construction of a vesical tunnel and a cuff at the end of the ureter has paid the greatest dividends.

Differences in technics of ureteroneocystostomy probably have been overemphasized. But there seems to be no doubt that some type of backing must be provided for the ureter to avoid reflux. Success probably depends more on low implanta-

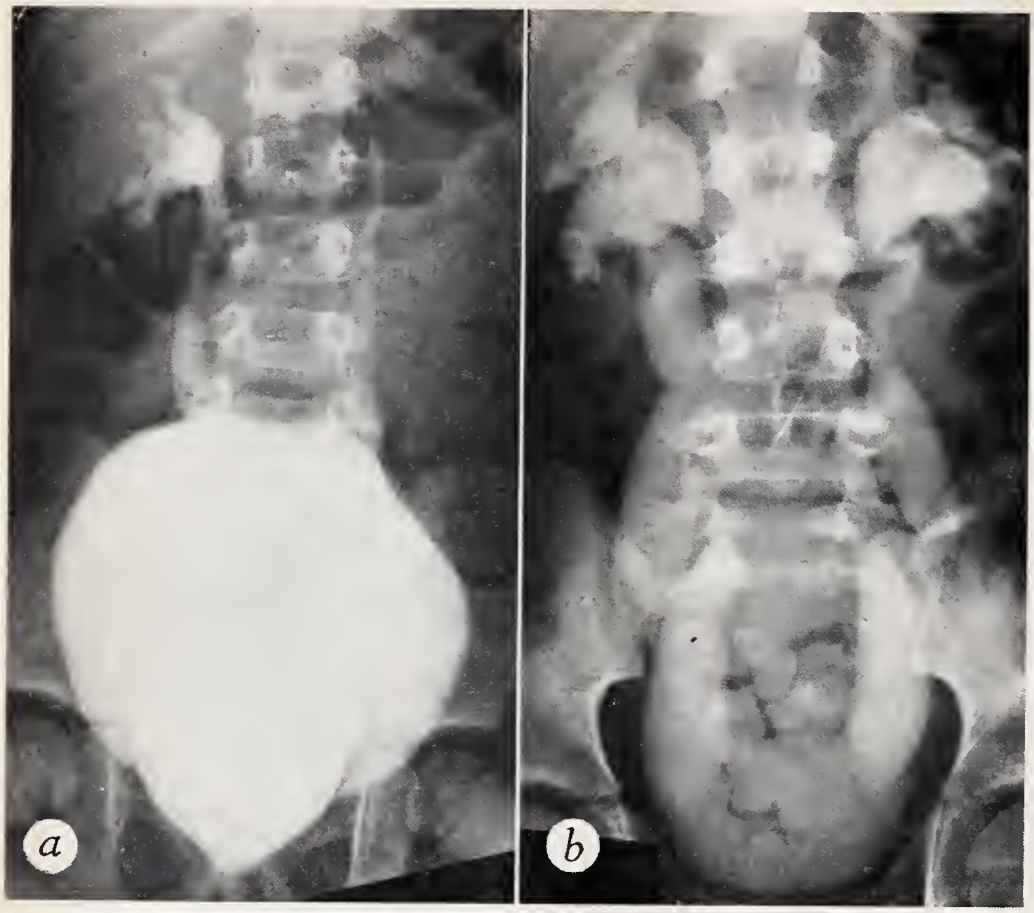


Fig. 5. *a*. Retrograde cystogram showing huge bladder, bilateral ureteral reflux and obstruction of vesical neck. *b*. Excretory urogram showing huge ureters and marked hydronephrosis produced by ureterovesical obstruction.

tion and the type of bladder with which one must deal than on the type of operation that is employed.

A congenital vesical diverticulum may compress the ureter, or the ureter may open into it and be bathed in infected urine. If the diverticulum is large it should be excised. If the ureteral orifice is near the stoma of the diverticulum the orifice can be preserved by turning it into the bladder with a small portion of the sac. If the ureter opens directly into the diverticulum it should be resected and reimplanted.

Ureteroceles usually are recognizable on excretory urography by the characteristic halo (fig. 6*a*). They tend to be bilateral. Many are inconsequential. Related duplication is not uncommon. Large ureteroceles may produce filling defects in the bladder (fig. 6*b*). Huge ones may plug the vesical outlet or even prolapse through the urethra.

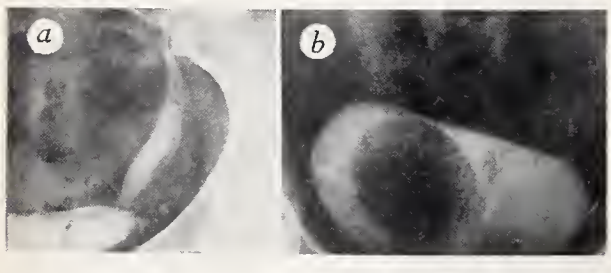


Fig. 6. *a*. Excretory urogram showing halo around left ureterocele. Note duplication of ureter. *b*. Excretory cystogram showing filling defect produced by large right ureterocele.

Treatment varies from surgical restraint to open operation. Endoscopic incision with the Collings knife is less likely to be followed by reflux than "unroofing" with the resectoscope. Open excision is best accompanied by reimplantation of the ureter or by nephroureterectomy.

Many oddities can occur along the ureter. Most of these produce obstruction which is diagnosed at operation or by the pathologist.

In many instances it will be safer to explore a kidney than to attempt retrograde pyelography, especially in male infants. Nevertheless, it always will be prudent to have adequate information regarding the contralateral kidney prior to operation. For example, bilateral Wilms' tumors may be present (fig. 7*a*).

But not all palpable masses in the flank are neoplastic. Hydronephrosis due to ureteropelvic obstruction has been indistinguishable from neoplasia (fig. 7*b*). Many huge kidneys are still salvageable, especially after nephrostomy and shrinkage. Figure 7*c* illustrates a solitary kidney that was preserved after pyeloplasty preceded by one year of nephrostomy drainage.

Fusion anomalies, especially horseshoe kidneys,

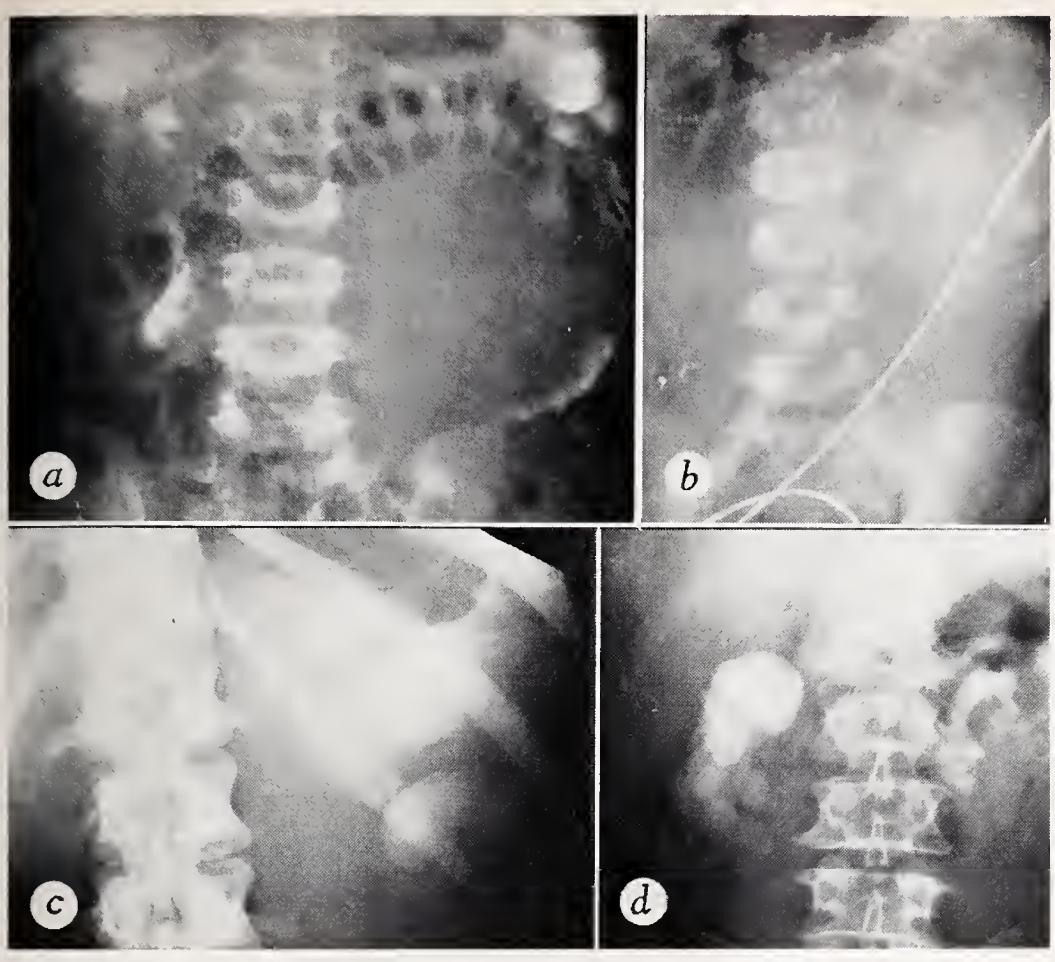


Fig. 7. *a*. Excretory urogram outlining bilateral Wilms' tumors. *b*. Retrograde pyelogram of huge left hydronephrosis extending far beyond midline. *c*. Excretory urogram showing only a few markedly dilated calices of large hydronephrotic solitary left kidney. *d*. Excretory urogram of a horseshoe kidney with hydronephrotic right segment.

also can be misconstrued as neoplasms during palpation (fig. 7*d*). Only a fourth require operation but it is important to divide or resect the isthmus and revise any ureteropelvic juncture that seems to be obstructive. Erring on the corrective side is much less hazardous than deferring pyeloplasty to a later operation.

The same philosophy should prevail regarding ureteropelvic obstruction without fusion. The customary type of congenital stenosis tends to be bilateral and warrants endless observation.

Ureteral Ectopia

Few patients have been mismanaged more flagrantly than the child with an ectopic ureteral orifice. Most of these have complete duplication of the renal pelvis and ureter. The ureter draining the upper segment usually opens at a lower level than its companion.

Most duplications are demonstrable by excretory urography. There may be two sharply defined units (fig. 8*a*), a hydronephrotic upper segment (fig. 8*b*) or a functionless part of renal cortex unserviced by the visualized portion of the collecting system (fig. 8*c*). A few of the elusive segments can be demonstrated by reflux during retrograde cystography if the extra orifice is within the bladder (fig. 8*d*).

Recurrent or uncontrollable infection of urinary incontinence is the most common problem.

Heminephrectomy with partial or total ureterectomy is the treatment of choice. If the ectopic orifice is intravesical, reflux may disappear after only partial ureterectomy and elimination of infection.

Twenty per cent of the ectopic ureters in females open into the posterior urethra (fig 9). Since these orifices are inside the sphincter, the stumps serve as urethral diverticula, foster infection, and usually must be excised.

Fifty per cent of all ectopic ureteral orifices are outside the retention mechanism of the lower urinary tract. The seminal vesicle is the most common site in males. Epididymitis and the distended vesicle are pathognomonic when supported by typical pyelographic findings. The region of the urethral meatus is the most common site in females (fig. 10).

Any time a female has persistent day and night urinary incontinence, despite normal intermittent urination, an extravesical ureteral orifice must be suspected. This classic clinical picture is probably the only urologic diagnosis that can be made accurately over the telephone. It is alarming how many of these patients remain untreated until

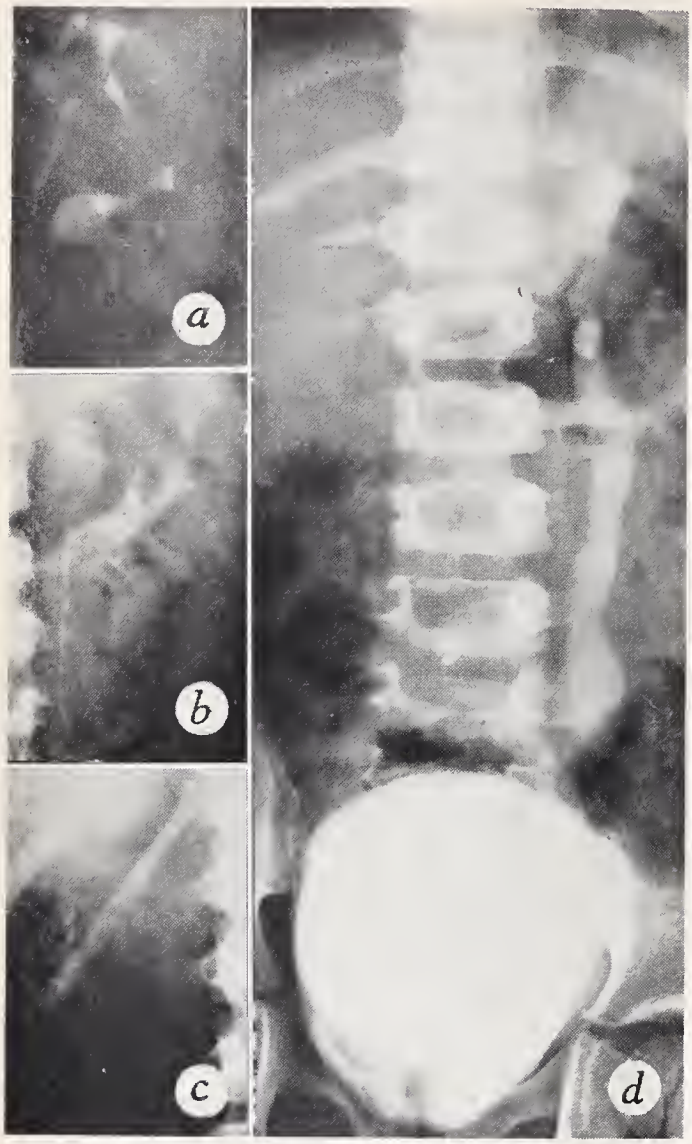


Fig. 8. *a*. Excretory urogram showing left duplication. *b*. Excretory urogram outlining ovoid, hydronephrotic upper segment and normal lower one. *c*. Excretory urogram showing upper pole of right kidney devoid of calices and pelvis. Note medial bulge in soft-tissue outline of upper pole. *d*. Retrograde cystogram with reflux into upper segment of duplicated left renal pelvis and ureter.

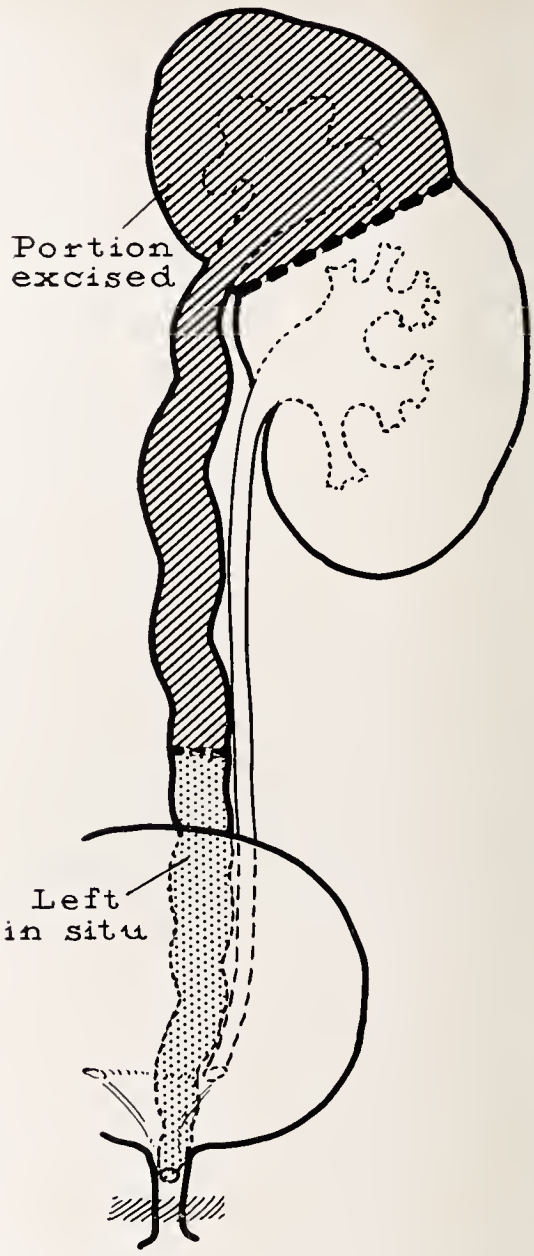


Fig. 9. Schematic reproduction of duplicated ureter opening in urethra proximal to sphincter.

they are young adults. They deserve a better fate, even if it entails bilateral renal exploration.

Torsion of Spermatic Cord

A final plea pertains to the only true urologic emergency, namely torsion of the spermatic cord. Too often these boys are operated on too late. Time usually is wasted by treating the patients for suspected epididymoorchitis.

Admittedly, differential diagnosis can be difficult. But torsion must be suspected in all acute, painful, scrotal swellings in children, especially if recurrent.

Prompt exploration has saved many testes. It has not complicated bona fide epididymitis or orchitis. Indeed concomitant incision of the tunica albuginea hastens recovery from orchitis and lessens the chances of atrophy. Delay of operation until the testis is infarcted invariably results in orchiectomy.

Since torsion tends to be bilateral it is wise to excise the contralateral tunica vaginalis prophylactically for adequate fixation. Hours are essential in these cases. One should not dissipate them by procrastinating when in doubt!

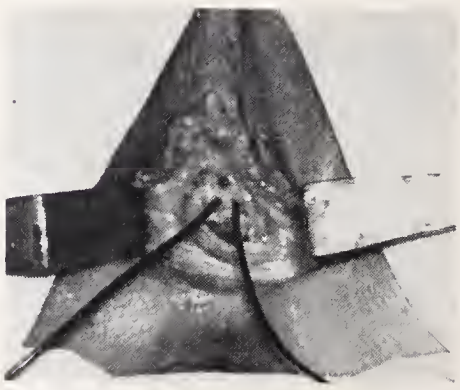


Fig. 10. Catheters in bilateral ectopic ureteral orifices just below female urethral meatus.

The Intrauterine Contraceptive Device

E. Stewart Allen, M.D. and Willis E. Brown, M.D.*

Since the introduction of the synthetic progestins several years ago as agents to suppress ovulation, there has been a great increase in interest in family planning. At about the same time, there was a considerable experience with the intrauterine devices. A great deal of interest and a large amount of research has dealt with the investigation of both the intrauterine contraceptive device[5] and the progestins.

The concept of an intrauterine foreign body preventing conception was first offered by Ernst von Grafenberg in 1928.[3] It was at this time that he discovered that by placing a small coil of silver wire in the uterine cavity that pregnancy could be prevented. However, the materials which he had available would not remain stable for long periods of time in the uterus. Consequently, degeneration of these materials were followed by numerous side effects and complications, some of them rather serious. He then experimented with other materials, including cellophane, silk worm gut, and various types of suture materials. Although all of these had some measure of contraceptive effectiveness, none of them were uniformly retained within the uterine cavity for adequate periods of time to warrant their use as a long term contraceptive. Von Grafenberg's concept of an intrauterine contraceptive was tried by many physicians[1] in Europe during the late 20's and early 30's. However, because of the inadequacy of the materials used, and the relatively high complication rate, the method was abandoned in the late 30's and generally condemned by gynecologists. Adding to the problem was a general confusion of the totally intrauterine device with the many cervical devices that were in use at that time.

The first report in the United States was by Holton and Tietz.[5] In 1959, Oppenheimer[7] of Jerusalem, Israel, published his experience concerning 329 women equipped with a total of 866 intrauterine contraceptive devices. He reported a total aggregate exposure of 793 woman years of use.** In this series he reported 20 pregnancies with a corresponding failure rate of 2.5 per 100 woman years of use. He utilized in his study a ring made of four strands of silk worm gut.

At approximately the same time, several Japanese physicians[6] reported on a series of 18,594 cases collected from 149 hospitals. They utilized metal and polyethylene rings and reported a failure rate of 1.3 to 1.7 pregnancies per 100 woman years of use. These reports published by Oppenheimer and Ishihama in 1959 stimulated worldwide interest in intrauterine contraceptives. Although many physicians who had never before seen a Grafenberg ring began to use them, sometimes with very limited success, encouraging observations were reported. Twelve years of experience published by Hall and Stone[4] in 1962 shows an aggregate exposure of 648 woman years with a failure rate of .9 per 100 woman years of exposure and no serious complications or side effects.

Evidence is now at hand to compare the contraceptive effectiveness of the intrauterine device with the effectiveness of the other more commonly used methods of family planning. In 1961, a sociological[9] study reported the family planning method of 1165 metropolitan couples in the United States. The results are reported in pregnancies per 100 woman years of use; condom, 13.8; diaphragm, 14.4; withdrawal, 16.8; rhythm, 38.5; douche, 40.8. Although the intrauterine contraceptive device was not included in this study, the unit of measurement is comparable and it can readily be seen that the intrauterine device is vastly more effective than any of the more common methods of contraception.

At the present time, there are numerous intrauterine contraceptive devices being used and studied. They are all made out of essentially the same material: straight line polyester plastic. The essential difference in each of these devices is in shape and size. The reported contraceptive effectiveness is equal with each of the different devices, and the slight side effects, i.e., post-insertion spotting and mild uterine cramps, are present with each of them to a limited degree.

The most popular and most readily available is the Margulies[10] spiral which is now being marketed by the Ortho Company under the trade name of Gynekoil. This consists of a pre-formed flat spiral of polyethylene whose resiliency permits it to be fitted into a straight inserting tube and extruded into the uterus by means of a

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**Woman years of use is the unit of measurement for contraceptive effectiveness. It is arrived at by the total number of months a single method has been used by the woman divided by 12. The effectiveness of a contraceptive method is expressed as pregnancies per 100 woman years of use.

plunger where it resumes its preshaped spiral form in the plane of the uterus. The spiral is available in two sizes. It is made up of 2.75 turns of polyethylene rod with an overall outer diameter of 20 or 30 mm. and with a tail of 100 mm.

The inserter bears an external flange that is used to orient the system so that the spiral lies in the frontal plane when it is pushed from the inserter into the uterus. A series of polyethylene beads is added to the straight distal end of the spiral which extends into a tail approximately two inches long. After insertion, several beads may be left protruding from the external os. According to Margulies,[10] the beaded extension has three advantages; it provides a method for the patient to check on the presence of the device, it permits quick and painless removal, and since the tail is slightly flattened in the cross section, it provides a means of determining if the Spiral is remaining in the frontal plane.

However, it is felt by other observers[11] that the cervical protrusion is more apt to induce ascending infection; that the cervical protrusion of the device may provide the initial leading surface for spontaneous expulsion which is reported from one to three percent; and, there is the possibility of developing cervical dysplasia. There are also reports of penile injury from the protruding tail.

A study at the University of Arkansas Medical Center[11] on 25 women was made in 1963. Each of these women was a candidate for hysterectomy. An IUCD was inserted for periods varying from six days to six months prior to surgery. The endometrium was studied histologically for evidence of infection and/or cellular change. In no instance was any pathological change observed. It was the conclusion of this study that the IUCD did not predispose to chronic or acute infection nor to cellular change which might indicate chronic irritation.

The Spiral has been used in several hundred patients at the University of Arkansas Medical Center with the beaded tail completely removed before insertion. There have been no incidences of infection or spontaneous expulsion.

Discussion

There are several questions that come to mind when one is considering the use of an intrauterine contraceptive:

(1) Who is the candidate for this device? This method of contraception can be used in any female, nulliparous or multiparous who desires a method of contraception which is inexpensive, highly effective, and requires essentially no precoital action on her part. There are several contraindications to the intrauterine contraceptive device; a distortion of the endometrial cavity such as might be found with uterine fibroids, and a history of acute and/or chronic adnexal or parametrial infection. It has been felt by some investigators that a severe acute cervicitis should be treated before insertion of the intrauterine contraceptive device.

(2) How effective are these devices? When one considers this question, the problem of spontaneous expulsion must also be considered. As has been previously stated, a number of investigators report spontaneous expulsion rate of one to three per cent. It is the general belief that if the device is expelled, it will be expelled with a menstrual period during the first three months after insertion. Consequently, the patient should fully understand the facts concerning her contraceptive method. At the time of insertion, she should be shown the device and the possibility of expulsion explained to her. She should be advised to observe carefully during her menses for the first three months and, should the device be expelled, she can return to her physician for reinsertion. After this time, she need have little concern for the retention of her IUCD. With the tail removed, we have had no incidence of spontaneous expulsion.

(3) What about follow up? It is felt by most investigators that the device should be removed yearly and left out for one menstrual period before re-insertion. This is probably not necessary and appears to be a holdover from the early observations of Grafenberg and others in the 1920's and 30's. Oppenheimer reports leaving spirals in for six years, and Ishihama has reported polyethylene rings being worn continuously for ten years without complications. However, the best general approach would be a yearly visit with removal of the device, routine examinations, and Papanicolaou smear for each patient.

(4) When is the best time for insertion of IUCD? The answer to this question varies with different investigators of the device. The most commonly held opinion that the best time for insertion is four to six weeks postpartum and/or six days following the cessation of menses. (However, Andros[10] of Temple University is inserting the Margulies spiral immediately postpartum with apparent success).

(5) What advice should be given the patient?

The patient should be shown the device, and its function explained. She should be informed as to the very slight side effects that may accompany the insertion of IUCD. Insertion is usually followed by minor symptoms such as slight bleeding and some pelvic pain which ordinarily disappear within a few days. The bleeding is usually no more than spotting and the uterine cramps can usually be controlled by mild analgesics. It has also been noted that the first menstrual period after insertion may be prolonged and have a somewhat heavier flow. After this, there should be no intermenstrual bleeding and each following period should be entirely normal. She should be advised to observe carefully for spontaneous expulsion during the first three menses.

(6) What is the mechanism of action of the IUCD? The specific mechanism of action is not known. At the present time, a great deal of work is being done on this. Studies at the University of Arkansas have provided some negative or collateral data.[11] It has been demonstrated that there is no interference in the development of a pre-decidua favorable for nidation. Also, sperm have been recovered in the fallopian tube with the device in place. These observations have been confirmed by others.

It is a commonly held belief with some work to substantiate it, that the intrauterine contraceptive device alters tubal and/or uterine motility to such an extent that it effects the descent of the fertilized egg into the uterus. Tubal motility may be altered to the extent that the ovum passes through the tube more rapidly or more slowly than normal and arrives in the uterus at a time when the endometrium is unfavorable for nidation.

(7) What are the advantages of this form of contraception? One of the great advantages of the IUCD is that it is completely reversible.[8] The removal of the device, which is a simple office procedure, returns to the patient immediately the ability to become pregnant. Removal may be accomplished at any time during the month with no relation to the menstrual cycle.

It has been shown that the IUCD is more effective than any other contraceptive in present use. Part of this success lies in the fact that there is limited opportunity for human failure, in that once it is in place it is effective until it is removed by the patient's physician. It frees the patient from pre-coital procedures and provides less interference with her sex response. These factors together with confidence enhance emotional tranquility.

Conclusion

It is apparent that the intrauterine contraceptive device offers a completely reversible method of controlling reproduction. The combined acceptability and effectiveness, of this method exceeds that of any contraceptive device in common use.

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Addison's Disease with Unilateral Blastomycosis Of Adrenal Gland*

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Although necropsy reviews of disseminated North American blastomycosis report adrenal involvement in roughly 10 per cent of cases, [1-4] proven adrenal insufficiency with actual destruction of the adrenal gland by blastomycotic granulomata is quite rare. Adrenal insufficiency associated with disseminated blastomycosis has been described; [1,4,5] however, in only one patient[1] was adrenal function critically assessed as shown by a failure to increase the urinary excretion of 17-hydroxycorticosteroids upon adequate stimulation with ACTH. The present case is unique in that a clearly defined adrenal insufficiency was shown antemortem by the criteria mentioned above and destruction of the adrenal gland by granulomatous inflammation due to North American blastomycosis found at autopsy.

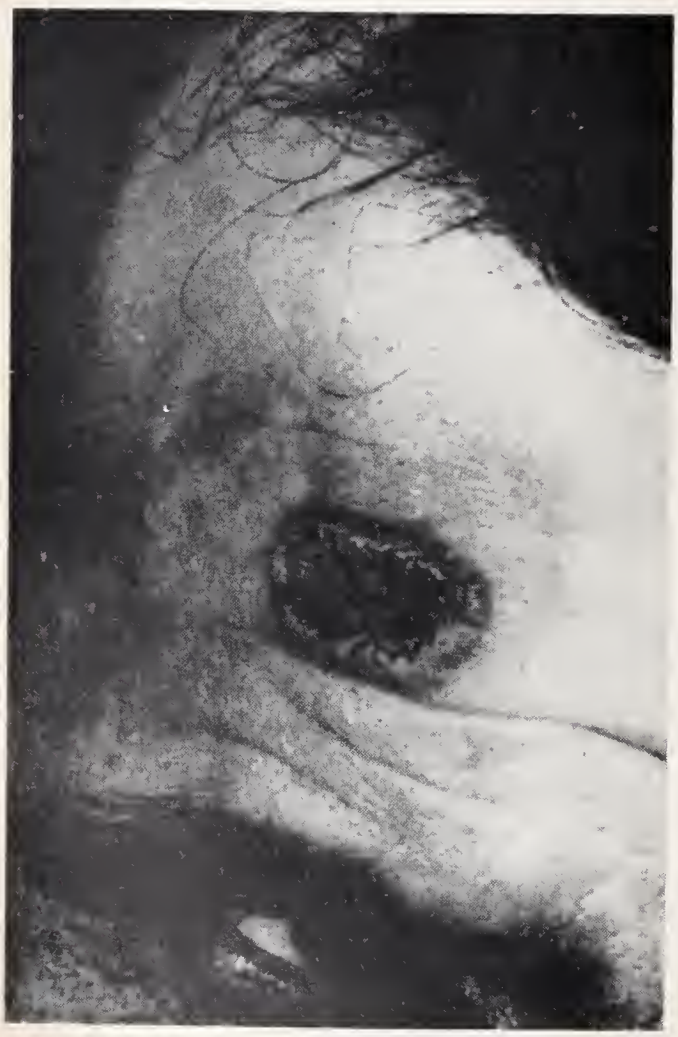


Fig. 1. Macroscopic appearance of initial facial lesion.

Case Report

F. C.,† age 39, was seen in 1948 in the University of Arkansas Medical Center with papular crusting lesions of the right forehead, shoulder, and left hip (Fig. 1). In a biopsy specimen of the facial lesion at this time were focal granulomata with microabscesses containing refractile spherules characteristic of *Blastomyces dermatiditis* (Fig. 2).

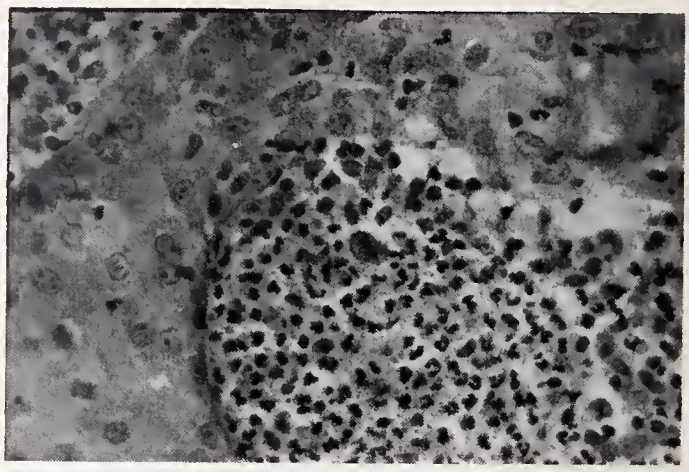


Fig. 2. Skin biopsy showing B. Dermatiditis (periodic acid-Schiff stain x 400).

Potassium iodide and local irradiation therapy failed to resolve the lesions, but a course of intravenous stilbamidine in 1953 resulted in complete healing of the skin lesions. In 1956 and 1957, after the onset of cough and exertional dyspnea, sputum cultures were negative for tubercle bacilli and fungi, but there was a radiologically demonstrable diffuse, nodular, infiltrative process which was progressive. In 1958 organisms of *Blastomyces dermatiditis* were cultured from a painful effusion in patient's right ankle; pain and swelling subsided promptly upon treatment with Amphotericin B (1.4 gms. total, given over 5 weeks). The spherules of *Blastomyces dermatiditis* were again

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†The antemortem chemical evidence of adrenal insufficiency in this patient was reported previously: Abernathy, R. S., and Melby, J. C., "Addison's Disease in North American Blastomycosis." N. E. J. Med., 266:552-554, 1962.

present in biopsy specimens of a lesion which appeared on the left side of the patient's face in August, 1959. Amphotericin B (total dose 0.5 gms. given over 4 weeks) again resulted in prompt healing. The patient's blood pressure at this time was 110/60 and serum electrolytes were normal.

Between 1959 and 1961 the patient was unable to work because of exertional dyspnea and easy fatigability. He was readmitted to the hospital in March 1961 with substernal pain, anorexia, and rapid irregular heart action. At this time the skin and mammary areolae were deeply pigmented and the buccal mucosa had patches of dark brown pigment. The blood pressure was 110/70 but five hours later was unobtainable. Addison's disease with acute crisis was suspected, and therapy with intravenous saline, hydrocortisone, and pressor amines was begun. These had little effect until a complete atrio-ventricular block which had developed was corrected. After a normal sinus rhythm was established, hydrocortisone and norepinephrine were effective in maintaining blood pressure at levels of 100/70 to 120/80. Oral medications were begun on the third hospital day (10 mg. hydrocortisone twice daily, 0.05 mgm. 9-alpha-fluorohydrocortisone daily and 0.25 mg. digoxin twice daily), and although electrocardiographic changes of posterior myocardial infarction were evolving, the clinical course was good.

Significant laboratory data at the time of admission included an SGOT of 32 units which 12 hours later was 460 units, initial serum sodium of 128 meq., potassium of 5.8 meq., chlorides of 91 meq., and a carbon dioxide combining power of 11 milliequivalents per liter. Electrolyte concentrations on the third hospital day were as follows (in milliequivalents per liter): sodium 134, potassium 4.9, and chloride 100. The carbon dioxide combining power was 28 milliequivalent per liter and the SGOT was 600 units. Serum precipitin test against Blastomyces dermatiditis[6] was positive. There was radiographic evidence of diffuse fibrosis of lungs.

The urinary excretion of 17-hydroxycorticosteroids was determined daily by means of the Silber-Porter method[7] with maximal adrenal stimulation by 80 units of ACTH-gel given intramuscularly every 12 hours for 4 days (this was done at the end of the third hospital week); 1.5 mg. dexamethasone twice daily was given by mouth, replacing oral hydrocortisone. Urinary 17-hydroxysteroid excretion was 2.8 mg. daily. Using this technique patients with normal adrenocortical function excrete 3 to 12 mg. 17-hydroxcorticosteroids daily and have a twofold to fourfold increase upon ACTH stimulation.

The patient, upon discharge, was maintained on methylprednisone, 4 mg. twice daily, and 9-alphafluorohydrocortisone, 0.05 mg. daily. Normal blood pressure readings and, in one instance normal serum electrolytes, were recorded at sporadic clinic visits.

In March ,1962, the patient was found prostrate on the street, sweating profusely and with severe substernal pain. He was dead upon arrival at another hospital.

Necropsy Report

The body, embalmed prior to autopsy, was well developed and nourished and had deep brown pigmentation of the areolar and genital skin. There were dense fibrous adhesions between visceral and parietal pleurae bilaterally; lungs were hypocrepitant and diffusely fibrotic. A healed myocardial infarct was in the interventricular septum superiorly, and, immediately posterior to this, was a recent infarct. Coronary arteries had moderate generalized atherosclerosis with complete occlusion by a recent thrombus in the left circumflex vessel. The left adrenal was quite enlarged with numerous soft, grey-white nodules which almost replaced the gland (Fig. 3).

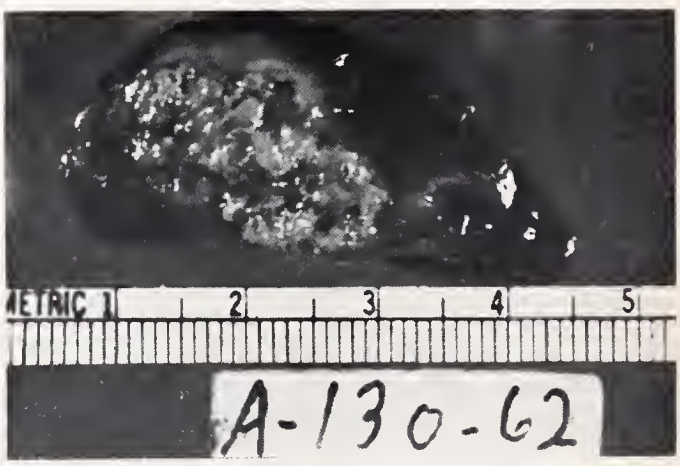


Fig. 3. Gross photograph of left adrenal gland showing extensive necrosis.

The right adrenal gland was located with great difficulty and weighed less than one gram.

Upon microscopic examination of the tissues there were old and recent myocardial infarcts, extensive pulmonary fibrosis and moderate emphysema; organisms of blastomycosis were absent in the lung. Sections of the left adrenal gland contained numerous large caseous granulomata with refractile spherules resembling *Blastomyces der-*

matiditis (Fig. 4); in sections of the right adrenal there was the usual cortex and medulla, both of

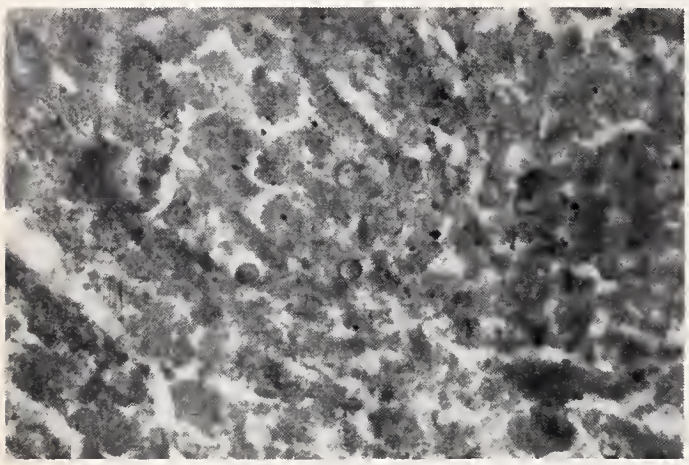


Fig. 4. Same as Figure 3. Necrotic adrenal tissue containing numerous budding forms of blastomycosis (periodic acid-Schiff stain x 400).

which, however, appeared much thinner than usual. There was no evidence of necrosis or inflammation in the right adrenal.

A portion of the left adrenal gland was ground with sterile sand and saline. Numerous organisms of *Blastomyces dermatiditis* were in this suspension; however, cultures yielded no growth. The suspension was injected intraperitoneally into 5 mice; all mice remained healthy and had no evidence of blastomycosis when killed 2 months later.

Comment

Apparently this patient is the first described in whom a critical assessment of adrenal function showed adrenal insufficiency during life, and actual adrenal destruction by the granulomata of North American blastomycosis was demonstrated after death. Unfortunately efforts at cultural isolation and characterization of the organism with material from the adrenal lesions were futile since the body had been embalmed prior to autopsy.

Questions arise concerning the small right adrenal gland which was not involved by the blastomycotic process. It is certain that this was not a normal gland with atrophy due to the administered steroid, since adrenal insufficiency was proven by appropriate laboratory procedures before death of the patient. In the absence of inflammation, it is doubtful that it was the remnant of a healed blastomycotic infection. Perhaps the most attractive explanation would be either hypoplasia or atrophy existing prior to the blastomycotic destruction of the left adrenal. However, most cases of primary adrenal hypoplasia are associated with anencephaly and/or pituitary hypoplasia, [8,9] neither of which was present. Idiopathic atrophy is characterized by necrosis and inflammation, which were also absent in this patient. Adrenal atrophy has been ascribed to autoimmune mechanisms, but this type of atrophy is usually accompanied by Hashimoto's thyroiditis, [10,11] a feature not found here. No definite explanation of the small right adrenal is apparent. It is clear, however, that the remaining adrenal tissue was insufficient for production of adequate amounts of adrenocortical hormone, even after prolonged stimulation with ACTH.

Summary

A case of adrenal insufficiency which fits the usual concepts of Addison's disease is reported in a patient with systemic blastomycosis. Antemortem clinical studies demonstrated adrenal insufficiency and postmortem studies showed unilateral adrenal destruction by the granulomata of North American blastomycosis. There was a small, contralateral adrenal gland which was uninvolved by blastomycosis.

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TEACHING SEMINAR

University of Arkansas Medical Center
Little Rock, Arkansas



Peritoneal Dialysis

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WITHIN RECENT YEARS, THE TECHNIQUE of peritoneal dialysis has been made sufficiently simple and practical so that it is now available to virtually every practitioner of medicine. Although the use of the peritoneal membrane as a dialyzing surface has been recognized for many years, it is only recently that production of non-reactive plastic catheters and commercially available dialyzing fluid has permitted utilization of peritoneal dialysis as a safe and practical clinical technique.[1] The purpose of this review is to describe briefly the principles, technique and major clinical uses for this procedure.

Basic Principles

The mesothelial surface of the peritoneal and its large surface area* permit its use as a relatively effective semi-permeable dialyzing membrane. The direction and rate at which various substances move across the peritoneum will depend on the concentration gradient between dialyzing fluid and the blood circulating within the peritoneal capillaries. In addition to concentration gradient, the limiting factors in the rate of movement, are the molecular size, configuration and mobility of the molecule in question, and the pore radius of the mesothelial cells. Equilibration rates for several substances of clinical importance are shown in Figure 1.[2] The rapidity with which osmolar equilibrium is achieved indicates a high degree of permeability of the peritoneum to water. Urea and potassium move slower than water and are approximately 70 per cent and 60 per cent equilibrated with plasma at the end of 60 minutes.

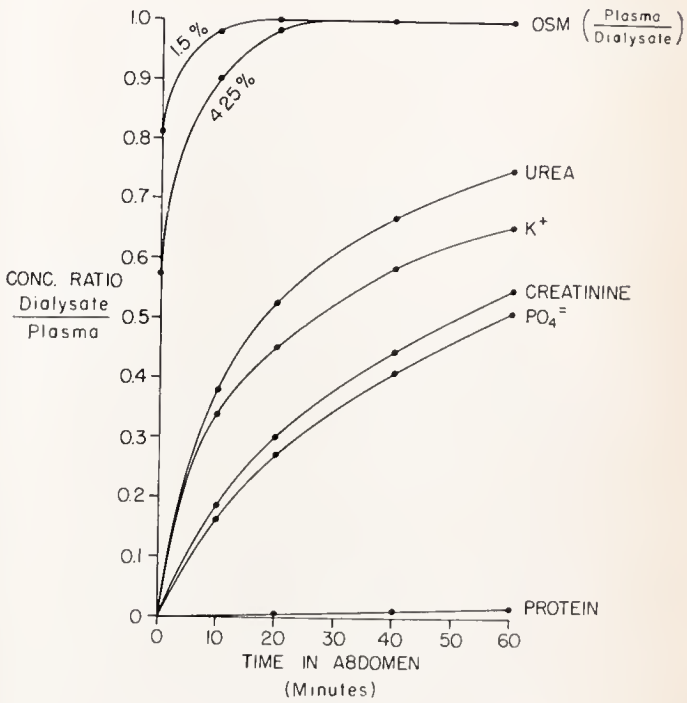


FIGURE 1

As time progresses and the concentration within the dialysate rises, there is a decrease in the gradient resulting in the tendency for the curves to "flatten out." The movement of protein across the peritoneum appears to be relatively small but can result in significant protein losses when dialysis is continued for a prolonged period. Because of the slow movement of large molecules, exogenous substances which are bound to plasma proteins would not be expected to move readily across the peritoneal membrane. On the other hand, compounds of low molecular weight (such as bromides and phenobarbital) should pass the peritoneal membrane with relative ease.

*The total surface area of the peritoneum in an average size adult is 22,000cm.^{2} This compares favorably with the area of Kolff Twin Coil artificial kidney of 19,000 cm.^{2} and with the estimated total surface of the human glomeruli of 18,000 cm.^{2}

Technique

Insertion of the dialysis catheter is carried out in the patient's room after the administration of suitable sedation. The bladder should be emptied immediately prior to starting the procedure. The patient is placed in a supine position and the abdomen is prepared and draped in the usual surgical manner. Strict attention must be paid to aseptic technique. The site usually chosen for insertion of the catheter is in the midline, one or two inches below the umbilicus. However, it may be preferable in some instances to utilize either lower quadrant. If so, insertion should be made at a point on the level with the anterior superior iliac spine just lateral to the rectus abdominis muscle.

Local anesthesia is administered and a small stab wound is made through the skin sufficient in size to permit introduction of the trocar. In most instances it will be convenient to distend the peritoneal cavity with two liters of dialyzing fluid by inserting a 13 or 15 gauge needle through the stab wound. This distention will greatly facilitate the introduction of the larger trocar and subsequent placement of the catheter. A size 14 or 18 Duke's trocar and cannula are introduced into the peritoneal cavity by utilizing a rotary twisting motion and moderate pressure. The entrance of the trocar into the peritoneal cavity can usually be detected by distinct "give" and a decrease in resistance to further insertion. The trocar is withdrawn and the cannula is advanced in a posterior inferior direction so that it is pointed toward the peritoneum. The peritoneal catheter is then introduced through the cannula and gently advanced so that its tip lies either in the perirectal fossal or in the right or left gutter. The cannula is withdrawn and the connecting tubing attached to the catheter. Opening the outflow at this point should result in a brisk return of the fluid used to distend the peritoneal cavity. If a brisk outflow is not obtained, it is likely that the peritoneum has not been penetrated, and therefore the catheter should be withdrawn and the trocar reintroduced. After satisfactory outflow has been obtained, superficial skin sutures are then placed around the catheter in order to provide a water tight seal. Bactitracin ointment is used around the base of the catheter and upwards onto the catheter for approximately one inch. A dressing is then securely placed around the catheter. As a routine, using aseptic technique, the dressing should be removed daily, the abdominal area around the catheter should be carefully scrubbed, bacitracin ointment reapplied and a new dressing applied. The bottles containing the dialyzing fluid should be warmed to approximately body temperature and then suspended about four feet above the bed as shown by Figure 2. An inflow of two liters



FIGURE 2

should be accomplished within 10 to 15 minutes provided the catheter is properly positioned. If difficulty is encountered with inflow, it can sometimes be corrected by forceful irrigation of the tubing with 20 to 30 cc of normal saline in order to unblock the small drainage holes in the catheter which occasionally become covered with fibrin. If this is not successful, inflow can usually be corrected by withdrawing the catheter, filling the abdomen, and reinserting a new catheter. Leakage from around the catheter when the ab-

domen is full can be corrected by additional sutures.

After the desired equilibration time, the fluid is drained by gravity into containers placed on the floor. Drainage time, in general, should not exceed 15 to 30 minutes. A culture of the dialysate should be obtained at least every third day. The composition of the usual dialysis fluids is shown in Table 1. Since these fluids are hypertonic to normal plasma, they will tend to produce some degree of dehydration, and one should expect to obtain a slightly larger outflow than inflow. Potassium chloride is added to the solutions as indicated by the clinical situation. As a routine, 5 mg. of aqueous heparin and 25 mg. of tetracycline have been added to each liter of the dialysis fluid.

Table 1
COMPOSITION OF PERITONEAL DIALYSIS FLUID*

Sodium	140 mEq/L
Potassium	None (added as required)
Chloride	102 mEq/L
Calcium	4 mEq/L
Magnesium	1.5 mEq/L
Lactate	43 mEq/L
Dextrose	15.0 Gm/L or 70.0 Gm/L
Osmolarity	372.0 mOsm/L or 677.0 mOsm/L

*Commercially available as Peridial,® Dianeal,® or Impersol.®

It is of extreme importance that adequate records be kept of both the time required for inflow and the volume of the fluid drained. The hypertonic fluid may produce rather extreme degrees of dehydration in the unconscious patient and these fluid losses must be replaced.

Clinical Indications

Acute Renal Failure

Proper management of acute suppression of urine flow must be based on the logical assessment of the etiology. Careful consideration of the setting in which anuria developed, history of antecedent renal disease, and evaluation of several simple clinical parameters will, in most cases, yield reliable information as to the most likely diagnosis. In the initial evaluation of the patient with reduced urine output it is well to keep in mind the universally known (but frequently forgotten) fact that the most common cause of diminished output is obstruction to the urinary bladder. Hypotension must be corrected and fluid deficits replaced before one can properly evaluate the role of renal parenchymal damage (acute tubular necrosis, cortical necrosis, acute glomerulitis, or nephortoxic nephropathy). In many instances the response to hypertonic mannitol may indicate that acute renal failure is not present and that other explanations must be sought for the anuria. Treatment in the conditions not involving damage to the renal parenchyma must be directed at correction of the primary abnormality. Occasionally, cases may be encountered in which the general condition of the patient will not permit adequate evaluation or treatment without improvement of the clinical state. Peritoneal dialysis affords a means of producing temporary improvement so that the primary condition may be attacked.

When obstructive uropathy, hypotension, and dehydration have been eliminated as etiologic factors and response to mannitol is absent, one may presume that renal parenchymal damage has occurred. Efforts then must be directed at maintaining fluid and electrolyte balance and at preventing accumulation of nitrogenous waste with resulting uremia. In patients with acute renal failure (such as that resulting from incompatible blood transfusion, crash injury, or myriad other causes) reversal of the renal failure and restoration of "normal" renal function can be anticipated after an average period of anuria lasting from three days to three weeks. Since early diuresis is expected in approximately one-third of such patients, it has been our policy to employ conservative management[3] during the first few days, provided there is no evidence of clinical uremia, hyperkalemia, or excessive hydration. Since the conservative approach involves rather drastic restriction of both food and fluids and is accompanied by a considerable amount of patient discomfort, it is preferable to institute peritoneal dialysis on a prophylactic basis if diuresis has not occurred within the first three to four days. Prophylactic hemodialysis in the treatment of acute renal failure is well established[4] and peritoneal lavage is instituted with the same goals in mind: 1) The correction and maintenance of fluid and electrolyte balance to as near normal as feasible. 2) To prevent the development of clinical uremia with its attendant obtundation leading to difficulty in pulmonary ventilation. 3) To reduce body wasting and endogenous breakdown of tissue proteins. 4) To eliminate the severe debilitation frequently observed with the imposition of rigid fluid and dietary restrictions. Continuous exchanges are carried out (usually utilizing two liters of fluid and a 60 minute equilibration time) during the first thirty-six to forty-eight hours. The potassium concentration in the dialysis fluid

is adjusted according to the demands of the clinical situation. No potassium is added to the dialysis fluid when there is severe hyperkalemia. After thirty-six to forty-eight hours of "around-the-clock" dialysis most patients shall have relatively normal electrolytes and improvement in uremic symptomatology. After achieving this, it is important to offer the patient an adequate diet. In general a selective diet is permitted with no restrictions of salt, protein or potassium. Fluid intake can be permitted on an *ad libitum* basis as long as an accurate daily weight record is kept and observed closely.

After initial continuous dialysis results in correction of the electrolyte abnormalities and uremic symptomatology, dialysis is carried out daily with only a sufficient number of exchanges to maintain the clinical improvement. This can be accomplished in most patients by utilizing six to eight two-liter exchanges each day. After completion of the daily dialysis, the connecting piece is tightly clamped and covered with a sterile dressing. When dialysis is not being carried out the patient should be encouraged to be out of bed and as active as feasible. Because of the possible removal of water soluble vitamins by dialysis, the diet should be supplemented with some type of vitamin preparation. The administration of drugs to these patients should be governed by the same principles that determine their use in the anuric patient not undergoing dialysis. Once diuresis is established and urine output exceed 1000 cc a day the BUN will usually reach a plateau and, after several days, begin to decrease in a stepwise fashion. The decline in BUN heralds the return of adequate renal function. At this time, the peritoneal catheter can be removed and dialysis discontinued with impunity.

In rare situations clinical deterioration may occur rapidly resulting in severe uremia, acidosis and hyperkalemia. In such cases, it is necessary to employ the full therapeutic armamentarium in addition to peritoneal dialysis. If facilities for hemodialysis are immediately available, such cases may best be treated by use of the artificial kidney followed in many instances by maintenance with peritoneal dialysis. The four- to six-fold increased efficiency by hemodialysis in such cases may be lifesaving.

Chronic Renal Failure

The indications for the utilization of peritoneal dialysis in longstanding renal deterioration is less clearcut than that in the acute decrease in function. At the outset it should be stated that the artificial maintenance of life in cases of long-standing renal deterioration should be undertaken only after grave consideration of the moral and ethical problems involved. Moreover, the patient with chronic renal disease balances on a fine line of "functional" (albeit diminished) renal compensation, and the primary aim in such cases must be toward the preservation of what little renal function exists rather than the artificial correction of existing chemical abnormalities. A number of important "reversible" factors exist which can produce severe symptomatic deterioration in renal function resulting in a loss of compensation as a functional, useful individual. It must be remembered that there is marked impairment of "renal reserve," and that the most trivial of insults may be sufficient to produce debilitation and even death. Consequently, primary considerations must be directed toward correction of accelerating or aggravating conditions frequently associated with chronic renal failure. A partial list would include sodium depletion (frequently the result of either salt restriction or diuretic therapy), infection, obstruction of the outflow of urine, cardiac failure, accumulation of therapeutic agents to toxic level due to impaired excretion, and diminished renal perfusion secondary to a number of causes of which dehydration is probably the most frequent. The extent to which these factors contribute to functional decompensation cannot be easily ascertained in any individual case. Obviously, when they are thought to play a major contributing role in the loss of functional adaptation, the physician's primary responsibility must be directed toward correction of these conditions. In such cases peritoneal dialysis may play an important role in permitting correction of chemical and clinical abnormalities in order that possible aggravating factors may be evaluated. In questionable cases, a trial of peritoneal dialysis may be undertaken. The rate at which decompensation returns following dialysis may be used as an index to indicate whether irreversible terminal renal failure is present.

When artificial means are employed to correct longstanding existing chemical changes it must be kept in mind that such abnormalities have developed over a prolonged period of time and that there are adaptive cellular responses to these derangements. Any abrupt correction should be undertaken with caution since drastic and occasionally even fatal adverse effects may be encoun-

tered. Rapid correction of an elevated serum potassium in the digitalized patient may produce digitalis intoxication and dangerous cardiac arrhythmias. A precipitous drop in the blood urea may lead to signs of increased intracranial pressure and convulsions because of the relatively slow movement of urea across the blood brain barrier. Correction of azotemia in the patient with chronic renal failure may also be associated with an abrupt decrease in the urinary output, presumably caused by reduction in the osmotic load presented to the few remaining functioning nephrons. Such a finding is an ominous sign and usually indicates that renal decompensation has become irreversible. When dialysis is continued for a prolonged period in the patient with chronic renal failure one may see the development of hypoproteinemic edema as a result of loss of serum proteins into the dialysis fluid. In many of these patients dietary protein has been restricted because of azotemia or anorexia, and the rate at which plasma proteins are produced cannot keep pace with the loss incurred by dialysis.

Table II
INDICATIONS

Acute Renal Failure
Chronic Renal Failure
Intoxications
Cardiac Failure
Overhydration
(?) Peritonitis
(?) Miscellaneous (NH_3, Uric Acid, Bilirubin)

Finally, it must be recognized that unless reversible factors can be found, improvement produced by dialysis will be temporary and may result in the unfortunate production of false hope in both the patient and his family. Peritoneal lavage should not be used to prolong life in advanced, end-stage renal failure unless it is felt that there are reversible features or unless specific objectives are being sought. If renal transplantation is anticipated, peritoneal lavage will permit artificial maintenance of life until a suitable donor is located and surgery is performed.

Repeated peritoneal lavage in the patient with chronic renal failure as a means of artificially prolonging life for indefinite periods has been described[5] but at this time must still be considered to be experimental. Several plastic and silicone rubber prostheses have been developed which permit repeated introduction of the peritoneal catheter without necessitating frequent trocar insertions. Some encouraging results have been reported with this technique in which home dialysis was carried out by members of the family or by use of an automatic cycling device.[5,6]

Acute Poisoning

The role of peritoneal dialysis in the treatment of acute intoxications by a number of therapeutic agents has not yet been defined. Certainly the most important considerations are the well established principles of maintenance of an unobstructed airway and adequate ventilation, prevention of shock, and attention to general supportive measures. In certain instances the question of dialysis will arise either because of a reduced output of urine or because of the severity of the intoxication. Several generalizations may be helpful in deciding whether or not to undertake dialysis.[7] The drug in question should have a molecular size small enough to permit its diffusion across the peritoneal membrane and it should not be significantly bound to plasma proteins. It should be ascertained that the toxicity of the drug is related to its concentration in the body and that the amount of poison removable by dialysis is significantly greater than that removed by normal body mechanisms. Since rapid elimination of the drug is desired, it would seem advisable to use hemodialysis because of its greater efficiency. If facilities for hemodialysis are lacking or if there are contraindications to the use of the artificial kidney (for example: bleeding or shock), peritoneal dialysis should be considered.

Of the commonly encountered intoxications, the question of dialysis arises most frequently with the barbituate group of drugs. The long acting barbiturates (such as phenobarbital) have a low degree of binding to plasma proteins and can be effectively removed by either peritoneal or hemodialysis. The intermediate drugs (amytal) and the long acting drugs (pentobarbital and secobarbital) have a higher degree of binding to plasma proteins and a correspondingly lower clearance across the peritoneal membrane. However, a significant decrease in blood level can be produced by peritoneal dialysis and it has been suggested that the addition of THAM and 5 per cent albumin to the dialysis fluid will significantly increase the peritoneal clearance of these drugs.[8] Bromides pass the peritoneal membrane with relative ease and intoxication with these drugs can be effectively treated by dialysis. Effective removal of salicylates by employing a solution containing 5 per cent albumin has been reported.[9] Methyl alcohol intoxication has also been treated

by peritoneal lavage.[10]

Cardiac Failure

The use of hypertonic fluid for peritoneal lavage can be advantageous in the treatment of severe congestive heart failure which has become refractory to the usual methods of treatment. As indicated, Figure 1, water movement across the peritoneum proceeds at a rapid rate and dialysis with hypertonic fluid can significantly reduce plasma volume and total body water. It should be noted that the commercially available 1.5 per cent dialysis fluid is hypertonic to plasma (normal plasma osmolarity 290 mOsm/kg water compared to 372 mOsm for the 1.5 per cent fluid and 677 mOsm for the 7 per cent dialysis fluid). By combining one liter of 1.5 per cent solution with one liter of 7 per cent solution, a fluid of approximately 528 mOsm/kg water is produced and will result in a negative balance of some three to six hundred ml. during each 2 liter exchange. Seven per cent solution alone is rarely used since the rapid removal of water may lead to profound reduction in plasma volume and shock. The improvement which results in severe congestive heart failure may be accompanied by a return in responsiveness to diuretic therapy, and occasionally, a spontaneous diuresis may be seen. Perhaps the greatest advantage of peritoneal dialysis in the management of cardiac failure are in those cases associated with impaired renal function in which the capacity for diuresis by conventional means is lost. In patients with valvular heart disease, dialysis with hypertonic fluid may result in sufficient loss of edema and improvement in clinical condition to permit surgery with minimal risk.

In all cases where the primary goal is fluid removal, special attention must be directed toward careful monitoring of the blood pressure and pulse since loss of fluid from the plasma volume may proceed at a rate greater than the entrance of peripheral edema fluid into the vascular space. In such instances, the decline in plasma volume may be accompanied by profound reduction in blood pressure and circulatory collapse.

Miscellaneous

The use of peritoneal lavage for the treatment of bacterial or chemical peritonitis has been reported. Direct installation of antibiotics in the dialyzing fluid seems to offer some advantage over systemic administration alone.[11] Our own experience has been inadequate to evaluate the use of dialysis as a primary treatment in these conditions. We have utilized peritoneal lavage in patients with renal failure whose course was complicated by either bacterial or chemical peritonitis and have been impressed that local and systemic evidence of inflammation regressed more rapidly than might be anticipated with systemic therapy alone. In these instances the procedure was carried out as in uncomplicated cases except that the antibiotic which was added to the dialysate was varied according to the sensitivity of the offending organism.

Peritoneal lavage has been used to reduce plasma uric acid concentration in gout[12] and acute lukemia.[13] It has been utilized also for removal of ammonia in hepatic coma.[14] Reduction in hyperbilirubinemia by peritoneal dialysis with a solution containing 2.5 per cent albumin has been described.[15] The clinical usefulness of dialysis in these conditions is not established and must await further experience.

Complications

In spite of the simplicity of peritoneal lavage, a number of common complications seem to be inherent in the procedure and should be anticipated. For the most part complications have been relatively mild and easily correctable. The more frequent of these are listed in Table III.

Table III
COMPLICATIONS

Pain
Bleeding
Infection
Perforation
Hypoproteinemia
Shock
Alkalosis

Perhaps the most common "complication" is a mild to moderate pain localized deep within the peritoneal cavity to an area adjacent to the tip of the catheter. In most instances this pain can be readily relieved by withdrawing the peritoneal catheter several centimeters. Occasionally it may be necessary to instill 1 per cent procaine or lidocaine directly into the catheter prior to instituting each exchange. Diffuse abdominal discomfort resulting from distention of the peritoneal cavity is sometimes seen during the first few exchanges and requires nothing more than mild sedation and reassurance. In children and patients of small stature it may be necessary to reduce the usual two liter exchange to one liter in order to avoid discomfort.

Slight to moderate blood tinged outflow is an-

other relatively common occurrence and need not cause undue alarm. Only a few ml. of blood are required to cause the dialysate to appear grossly bloody and it is only rarely that blood replacement will be required. In most instances the bleeding appears to originate in the abdominal wall at the site of the trocar insertion rather than from trauma to any intra-abdominal viscus.

Clinical peritonitis is a surprisingly infrequent complication of the procedure when meticulous care is observed with insertion of the catheter and with the daily care of tubing and dressings. In spite of the absence of clinical peritonitis, a small number of routine cultures of the outflow have shown the presence of coliform bacteria without clinical signs or symptoms of infection. In most instances subsequent cultures have become negative without alteration in the dialysis schedule or routine. It is thought that the direct trans-intestinal migration of coliform bacteria is responsible for these intermittently positive cultures and that the presence of bacteria in the dialysate does not constitute an indication for discontinuance of dialysis, for change in routine, or for systemic therapy. When signs and symptoms of overt, frank peritonitis do develop, the infection can usually be readily controlled by the addition of the appropriate antibiotics to the dialyzing fluid and institution of systemic therapy.

Hypoproteinemic edema accompanying prolonged periods of dialysis has been mentioned previously and is readily controlled by infusions of albumin or plasma. The average protein concentration in the dialyzing fluid after 60 minutes of equilibration is generally between 25 and 100 mg per hundred ml. representing a total loss of 0.5 to 2.0 grams of protein with each two liter exchange. The cumulative loss of protein during a 24-hour period of dialysis may be as great as 20 to 30 grams and may result in marked decrease in the plasma oncotic pressure leading to formation of edema. It is important that this edema be recognized as the result of diminished plasma oncotic pressure rather than cardiac failure or excessive hydration.

Perforation of the intestine is a potential complication associated with the blind introduction of the sharp trocar into the peritoneal cavity. Although this hazard should be kept in mind, it has occurred infrequently and only in association with adhesions or extensive peritonitis.

A fall in blood pressure and acceleration of the pulse may be seen with rapid fluid removal produced by the use of hypertonic dialysis fluid. These changes are readily reversible by the use of blood or plasma to expand the vascular volume and usually can be prevented by close attention to the rate at which net fluid removal proceeds.

Fluid retention with edema formation in the abdominal wall and perinexum may occasionally be seen as a result of catheter misplacement. Some of the small holes in the catheter may remain outside the confines of the peritoneal cavity but within the anterior abdominal wall, resulting in a portion of each exchange leaking into the abdominal wall. Significant and dangerous accumulation of fluid may result. A similar complication is occasionally seen following recent surgical procedures in which there is discontinuity of the peritoneal membrane permitting leakage of fluid into the extra-peritoneal space. This is rarely observed if dialysis is delayed 24 to 48 hours into the postoperative period.

Metabolic alkalosis has been relatively frequent in patients undergoing dialysis for prolonged periods, particularly when there is excessive hydrogenion loss through naso-gastric suction. The alkalosis per se rarely produces any adverse effects but may be associated with a rather marked reduction in serum potassium, presumably as a result of an intracellular shift of potassium associated with the increase in pH. Since the correction of acidosis by peritoneal dialysis depends on the metabolic conversion of sodium lactate to sodium bicarbonate, patients with severe hepatic failure undergoing dialysis may occasionally demonstrate marked resistance to correction of acidosis because of impaired lactate metabolism. Supplementary intravenous sodium bicarbonate may be required for correction in such cases.

Summary

The principles, techniques, clinical indications and applications of peritoneal dialysis have been discussed. Some of the complications arising from the procedure have been described. In our experience we have found intermittent peritoneal lavage to be an efficient, effective and relatively safe procedure for the removal of a number of endogenous metabolites and exogenous toxins.

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A Radiologist Looks at Radiation Protection Procedures

L. H. Garland (San Francisco General Hosp, San Francisco) *Radiology* 82:963 (June) 1964

In addition to naturally occurring radiations, man is exposed to refined or artificially produced radiations, chiefly in the form of x-rays, radium, and radioactive isotopes. Such exposures may be a source of potential harm. The hazards include body (or somatic) and local gonadal (genetic) injury. Quotations from various authorities indicate the scope of the problem. Attention is called to the increase in the number of installations for the production of ionizing radiations in hospitals, clinics, and physician's offices, and their frequent use without supervision or direction by a qualified radiologist. Suggestions for the correction of these conditions in the interest primarily of the patient are offered. They include state registration of sources or units for the production of ionizing radiation, inclusion in the medical curriculum of instruction in radiation uses and hazards and pertinent examination questions on these matters, operation of x-ray equipment only by or under the direction or supervision of a duly licensed physician or surgeon. Radiologic examinations should be avoided so far as possible in early pregnancy.

Measurement of Stress in Fasting Man: A Pilot Study

E. J. Kollar et al (Center for the Health Services, Los Angeles) *Arch Gen Psychiat* 11:113 (Aug) 1964

Seven healthy adult males were studied, using a variety of psychological, physiological, and biochemical measures over a period of seven days, as two of the men fasted for four days, three fasted for six days, and two served as controls. Clinically, the starving subjects tended to conserve energy by restricting their activity level. Hypothermia gradually developed during the period of observation. Autonomic nervous system measurements, although not conclusive, showed a trend toward parasympathetic balance. The subjects reported an increased irritability and an underlying tendency toward depression, which was reflected in the Clyde Mood Scale. Total plasma corticoids, urinary 17-hydroxycorticosteroids, and urinary 17-ketosteroids remained unchanged. After 36 hours of starvation, there was a urinary output of a stress responsive indole substance, which previous studies have shown to occur only during stress or after an injection of corticotropin. Starvation involves different mechanisms than are conventionally considered to be activated by noxious stimuli or life situations.

ELECTROCARDIOGRAM OF THE MONTH

WHAT IS YOUR INTERPRETATION?

AGE: 22 SEX: F BUILD: MEDIUM BLOOD PRESSURE: 130/70

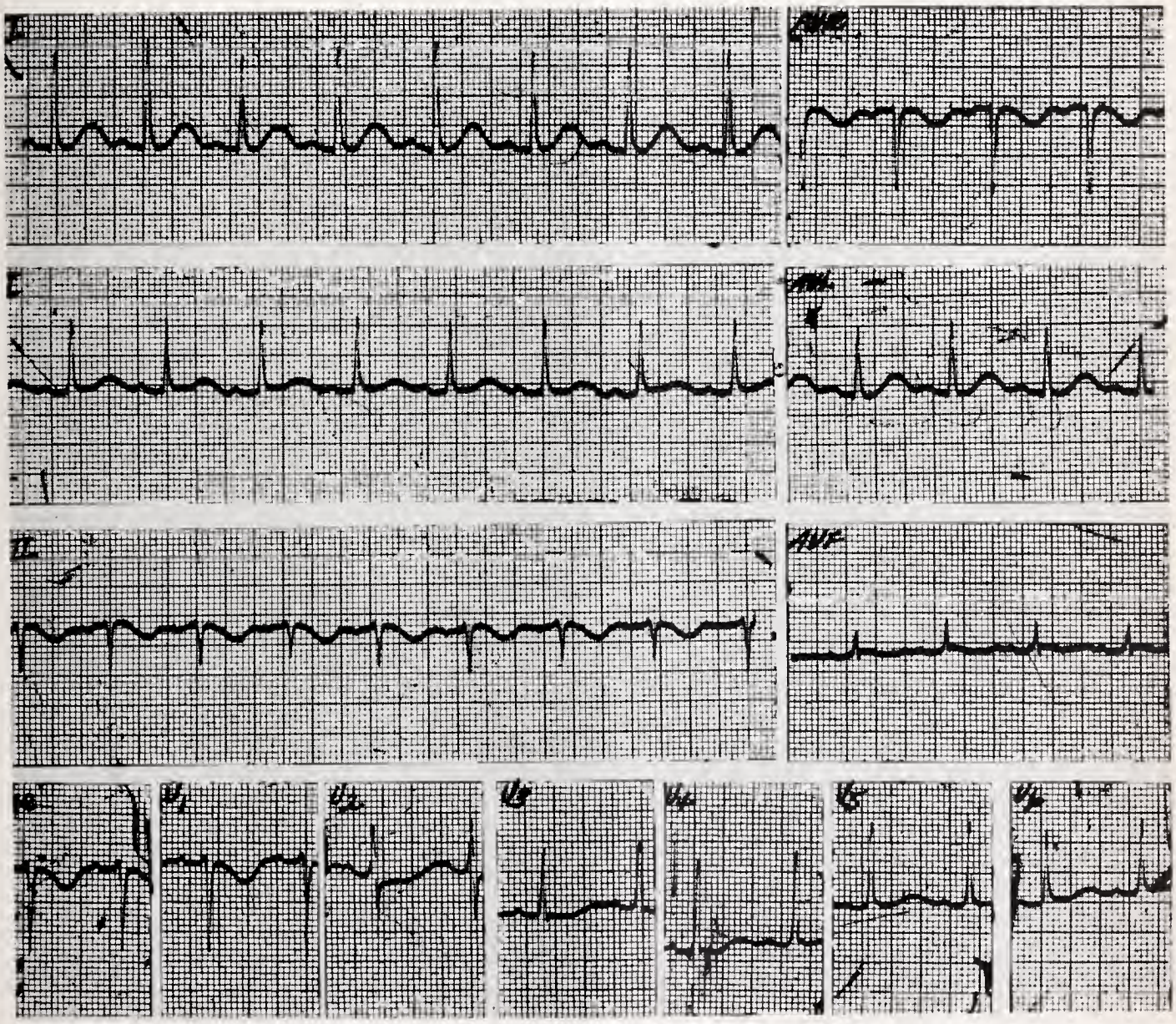
CARDIAC DIAGNOSIS: NONE

OTHER DIAGNOSES: Hypokalemia, Pyelonephritis

MEDICATION: None

HISTORY: 2 weeks duration nausea and vomiting

Answer on page 169



The Department of Medicine, University of Arkansas Medical Center

*James S. Taylor, M.D., Professor of Medicine

WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

Answer on page 169



HISTORY: No. 18-58-81

Five-month-old male. At two and a half months of age the child developed swelling of the lower face which had persisted. No fever had been noted at any time and the child was afebrile on admission. Physical examination revealed the entire lower jaw to be swollen, hard, tender, and warmer than the remainder of the body.



Salmonellosis

Since the work of Dr. D. E. Salmon and Dr. T. Smith in the 1880's, there has been considerable interest in the bacterial diseases caused by the group salmonellae named in Dr. Salmon's honor. The salmonellae now number nearly 800. They are very hardy organisms in many respects and have a variety of hosts in addition to man. Some of the serotypes appear almost exclusively in one animal host, as typhoid in man; but more of them such as *S. typhimurium,* the mouse typhoid bacillus, appear to adapt to living in many hosts.

We are all aware of the great economic importance of *S. pullorum* as a cause of "bacillary white diarrhea" in chickens and *S. gallinarum* which causes "fowl typhoid." In addition to the greatest single reservoir being in domestic fowls, our domestic animals have their share for as many as 20 per cent of the fresh pork sausage samples examined in a Florida study, and up to 37 per cent in some Georgia studies, showed contamination by salmonella. One out of four samples of dehydrated dog meal was also found to be contaminated with salmonella. Thus it is surprising that all humans are not infected continuously by one salmonella serotype or another. Wild birds and reptiles have been shown to be frequent carriers of these organisms.

These ubiquitous organisms can be acquired by man directly from any of the hosts which man handles, or secondarily from contaminated animal products. Although cooking will kill these organisms, those remaining on uncleaned surfaces that are picked up on the finished food can recontaminate that food as well as other foods that are placed on the contaminated surfaces or handled with contaminated hands or instruments.

Tracing of the more frequently encountered serotypes is less definitive than when the rarer serotypes are involved. It is also worth mentioning that the host may fail to show the serotype upon culture 24 to 48 hours later although it is demonstrable initially. Thus it is not surprising that an individual's stool culture is negative when that individual is a prime suspect as the source of a small outbreak when he alone escaped illness.

The Canadian Public Health authorities emphasized the importance of egg products in the dissemination of salmonellosis. They were able, by meticulous study, to trace common source epidemics that appeared to be small local outbreaks but were in actuality a result of pooled dried egg products. Similar studies in England and the United States have shown that commercial egg products and other foods derived from animals are subject to contamination with this group of organisms. This problem is not limited to any one country but has international ramifications.

Regardless of the source of salmonellae the patients are subject to the same symptoms after an incubation period of 6 to 48 hours, although some cases may not show up for as much as seven days. The degree of severity of the symptoms as well as the duration of the incubation period may vary according to the size of the inoculum. Obviously, an individual with a large initial number of organisms should be expected to have proportionally greater numbers as multiplication occurs in his body; also host resistance and virulence of the bacteria interact to help produce variation in symptomatology.

Fever, nausea, and vomiting are often present as are diarrhea, abdominal cramps, and prostration. Three main types of clinical syndromes are attributed to salmonella infections; these are enteric fever, acute gastroenteritis, and septicemia. The adaptability of the salmonellae is obvious by the fact that they may localize in any tissue of the body producing abscesses or causing arthritis, cholecystitis, endocarditis, meningitis, pericarditis, pneumonia, or pyelonephritis.

The patient is able to discharge viable salmonellae throughout his infection which may vary in duration. Subsequently, the patient may remain a transient carrier from three to 21 days,

but may remain a carrier for longer periods of time.

The accompanying table shows the occurrence of reported cases of salmonellosis giving the serotype for the cases confirmed by culture for the years 1961, 1962, and 1963. Those on which the presumptive diagnosis was based on agglutination series are shown only in the totals by year, as are those based on clinical or epidemiological evidence. It should be noted that the serotypes *S. typhimurium* and *S. newport* have been the most frequently isolated by the State Hygienic Laboratory.

Prompt reporting of cases alone with intensive epidemiological studies not only helps in diagnosing other cases in which cultural methods are unable to demonstrate the causative organism, but also in many instances may prevent others from becoming ill and thus interrupt an epidemic, especially where the remaining food has been refrigerated for a subsequent serving.

The role of the human carrier in sporadic cases receives much less recognition than when he is the contaminator of the food in a common source outbreak. The vehicle is frequently shown to be potato salad or some other much handled, more tempting delicacy, such as creamed-filled pastries. The variability of the carrier state in duration of time makes food handler's certificates false security. A much more desirable prerequisite would be food handlers training and supervision in order that optimum sanitary equipment and practices would be used. Until everyone demands and practices optimum sanitary measures, the impact of man upon his fellow man will continue with an ever increasing amount of human suffering as well as increased need for laboratory assistance and epidemiological follow up.

Control measures are dependent upon the cooperation of the public, workers in industry, agriculture, public health, veterinary medicine, and medical practice.

ISOLATIONS FROM PERSONS OF SALMONELLA* BY SEROTYPE, ARKANSAS, 1961-63

SEROTYPE	1961	1962	1963
arkansas	1	---	---
bareilly	---	1	---
blockley	1	1	4
bredeney	1	---	---
cholerasuis var. kunzendorf	---	1	---
cubana	---	---	1
derby	3	---	2
enteritidis	1	1	1
georgia	1	---	1
heidelberg	1	---	5
infantis	3	4	6
java	---	---	1
javiana	4	5	9
litchfield		1	---
manhattan	1	---	---
minnesota	---		1
mississippi		2	3
montevideo	1	1	---
muenchen	1	1	1
newington	---	---	1
newport	10	19	16
norwich		1	
oranienburg	3	3	4
poona	---	---	1
reading	---	1	---
st. paul	2	5	1
tennessee	2	---	1
thompson	1	2	2
typhimurium	10	15	26
typhimurium var. copenhagen	2	1	6
undetermined or unspecified type	1		11
Total cases confirmed by culture	50	65	101
Diagnosis based on agglutinations	10	3	13
No laboratory work reported	12	3	9
Total reported cases	72	71	126

*Typhoid fever not included.

Respiratory Failure After Thymectomy for Myasthenia Gravis

J. M. Head (87 Chestnut St, Boston) *Ann Surg* 160:123 (July) 1964

Respiratory failure is the chief early complication and cause of death after thymectomy for myasthenia gravis. It quite often occurs in a setting of increased sensitivity to the effects of cholinergic drugs on the respiratory tract, hence, is a type of cholinergic crisis. Early recognition of toxic symptoms is vital; they differ from those normally seen and may occur when there is paradoxical general muscle weakness. A revised program of postoperative care involving omission of cholinergic drugs for two to three days and improved respiratory care with free use of tracheostomy and mechanical assistance has reduced the mortality and morbidity of the procedure.



EDITORIAL

Spread and Control of Staphylococcal And Streptococcal Infections

Alfred Kahn, Jr., M.D.

In looking back through the history of medical research, it is apparent that there are decided enthusiasms for certain fields in one era. A certain amount of progress is made and then interest centers on some other area. During the middle of the last century bacteriology was intensively investigated due to the stimulus of Pasteur, Koch, Ehrlich and other greats. This was a period in which the general use of microscopes became widespread and bacteria could be seen and studied in many laboratories. Interest in the general field of bacteriology waned and in the early part of this century biochemical research stirred the imagination of physicians and scientists more than bacteriology. Domagh's rediscovery of "sulfa" and the subsequent development of analogs again aroused great enthusiasm in the field of bacteriology. The development of antibiotics was a natural sequitur. Despite intensive study there are many unexplored avenues in the field of bacteriology.

The May, 1964, issue of Annals of Internal Medicine contains three studies of considerable interest to the practicing physician.

Rammelkamp, Mortimer and Wolinsky have studied the transmission of streptococcal and staphylococcal infections. The authors were interested in determining modes of spread of infection of staphyloccus and streptococcus in order to prevent contagion in a susceptible patient. They reported the work of earlier studies which showed a high degree of correlation between organisms in the environment as bedding, etc. and epidemics of infection. Rammelkamp *et al.* found that streptococcal infections of the respiratory tract were spread by "direct contact with an infected individual. Few, if any, respiratory infections are caused by the airborne route or by contact with environmental deposits." For example, when the distance between the carrier and the uninfected was 30 feet, the number of new cases of streptococcal infection transmitted by this droplet type of spread of infection was no more than in a group of controls. Contaminated blankets failed to produce a significant number of streptococcal infections; the same was true of dust. Staphylococcal infections were also studied; staphylococcus grow in the respiratory tract and skin where streptococcal infections tend to be localized to the respiratory tract. Staphylococcal infections were studied in nurseries and the authors concluded that most carriers expelled few bacteria from the nose. The organisms seemed to be spread by the hands of nurses and attendants who cared for the patients. Control of the spread of staphylococcal infection is best achieved by prevention of contamination of the hands and effective decontamination of the hands of personnel if they are contaminated.

Bullock, Hall, Spink, Damsky, Greene, Vesley, and Bauer have described their experiences in setting up a 17-bed isolation unit at the University of Minnesota Hospitals. During the course of the studies, the authors typed Staphylococci from the infected patients in order to study cross infection. Despite all efforts, 44 per cent of the strains were untypable. These studies tended to invalidate the theory that staphylococcal infections are spread by so-called nasal carriers; the

correlation of phage types between patient and carrier were poor. Furthermore, although the nurses were often nasal carriers, the number of nasal carriers did not increase after working with patients infected with staphylococci. The therapy results of these authors were excellent in that they had only 14 deaths due to staphylococci in 213 patients with staphylococcal infections; this was attributed to the use of Methicillin and oxacillin; if septicemia was present, the death rate increased to 31 per cent and this is only half the rate prior to the use of the drugs. Fourteen deaths in this series were due to bacteria other than staphylococci, and 13 were gram negative rods; the reasons for this are unknown.

Jensen and Lassen reported the treatment of fulminating Staphylococcal infections treated with Fucidin and penicillin and with semi-synthetic penicillins. Fucidin is a steroid without hormonal activity extracted from Fusidium coccineum. Both in vitro and in vivo studies have demonstrated bacteriocidal action against gram positive bacteria, including Staphylococcus. Resistance of the bacteria will develop to Fucidin so the authors combined its use with semi-synthetic penicillins and prevented the onset of this resistance. The authors treated 25 patients with very severe Staphylococcal infections and only 4 died. The special value of this combination is that it can be given immediately and no tests have to be performed for bacterial sensitivity. The deaths occurred within the first five days of therapy and these patients had complicating disease. The authors treated another series of complicated cases with Fucidin but did not report their results except to say that the drug seemed beneficial. Fucidin's only complication was mild dyspepsia. The authors especially emphasized that the 21 surviving patients reported here had previously been unsuccessfully treated with other antibiotic programs and secondly that all eight cases of staphylococcal pneumonia treated by them with Fucidin survived.

There is much of practical value in these three articles. Streptococcal infections are important and they produce dread complications as rheumatic fever, etc., but most respond readily to therapy. Staphylococcal infections have not responded to therapy in many instances and cross infections in a hospital may produce immediate dire results to an already ill patient. These articles particularly illuminate some of the problems of the hospital control of Staphylococcus as—should nasal carriers be treated, should nasal carriers be discharged from certain positions, how important are masks, how important is antisepsis of the hands, are Staphylococcal isolation wards necessary, is environmental control of staphylococcus an important measure, etc., etc.

Not alone is this information helpful to physicians but also to hospital administrators.

Comparison of Blood Stored in ACD and in Solution Containing Heparin, Phosphate, Glucose, and Adenine

W. Kozek and C. Bishop, *Transfusion* 4:271 (July-Aug) 1964

Duplicate blood samples were obtained from six healthy young men, one aliquot being collected in a solution of citric acid-trisodium citrate-dextrose (ACD) and one aliquot in a solution of heparin-glucose-phosphate-adenine (HGPA). All were stored under blood bank conditions for a total of four weeks. The HGPA samples maintained their adenosine triphosphate (ATP) and nucleotide adenine levels much better than the ACD samples and had generally higher pH's and faster rates of glycolysis. Their osmotic fragility and plasma K^+ levels were similar to those of the ACD samples. Because there was considerably more hemolysis in the HGPA samples than in the ACD samples, and in the absence of red cell survival data the HGPA system is not recommended at this time as a substitute for the ACD system, but as a comparative system to reveal metabolic shortcomings of the ACD storage system. HGPA system should be evaluated from other aspects.

MEDICINE IN THE NEWS

New Clinic at Gentry

The Board of Directors of the Gentry Community Medical Center has announced that Drs. Donald and Robert Weaver have selected Gentry as a place to practice. The Sears-Roebuck Foundation assisted the citizens with their drive for the new Community Medical Center.

Dr. Clements Attended Meetings in Washington

Dr. Sam D. Clements, clinical child psychologist at the University of Arkansas Medical Center, went to Washington, D. C., in July for consultation with the Department of Health, Education, and Welfare, in the area of children with learning and behavior disorders. He also consulted with the director of the National Institute of Neurological Diseases.

Dr. R. B. Robins Appointed as Member of the Council of Legislative Activities

The Board of Trustees of the Arkansas Medical Association appointed Dr. R. B. Robins as an additional member of the Council on Legislative Activities at the San Francisco meeting on June 20, 1965.

Medical School Programs in Development 1963-1964

In 1959, the Surgeon General's Consultant Group on Medical Education recommended 10,400 M.D. graduates per year by the year 1975 to meet the needs of our expanding population. If the present attrition rates continue, this will mean that U. S. medical schools must admit 11,700 first year students in 1971. Eight thousand, seven hundred and fifty-four first year students were enrolled in the fall of 1963. Thus, over the next seven years, U. S. medical schools must provide nearly 3,000 more first year places than presently exist. New places can only be provided in two ways: the creation of new schools and the expansion of existing schools. Commitments have presently been made to establish twelve new schools which will offer an eventual total of something over 800 first year places. This leaves approximately 2,200 new first year places that are still needed. Although additional new schools are in prospect, most of these places must result from the expansion of existing schools. While twelve new schools are still in various stages of development, all except one have appointed chief administrative officers.

Annual Meeting of the Section of Ophthalmology

The Section of Ophthalmology of the Southern Medical Association has completed a most outstanding program for its annual meeting in Memphis, Tennessee, November 16-19, 1964. This year's Chairman, Dr. Albert C. Esposito of Huntington, West Virginia, has announced that the Guest of Honor and Guest Speaker for this year's session will be Dr. Harold F. Falls, Associate Professor of Ophthalmology at the University of Michigan School of Medicine, Ann Arbor, Michigan.

Dr. Hyman Heads Group

Dr. Carl Hyman of Pine Bluff was named president of the Arkansas Medical, Dental and Pharmaceutical Association at the group's 71st Annual Convention in Hot Springs in June. Dr. U. S. Reed of Pine Bluff was elected first vice president. Dr. T. J. Collier of Hot Springs serves as executive secretary and Dr. R. C. Lewis of Camden was selected assistant secretary.

Surgical Congress at Hot Springs

The Arkansas Chapter of the American College of Surgeons met at the Velda Rose in Hot Springs in June. Two members of the staff at the University of Arkansas Medical Center were speakers at the Scientific session—Dr. Benjamin Drompp, professor and head of the Division of Orthopedics; Dr. Ferdinand Greifenstein, professor and head

of the Division of Anesthesiology. Dr. Martin Eisele was in charge of arrangements for the meeting. Dr. Haymond Harris of Newport is president of the chapter and Dr. James Walt of Little Rock is secretary.

Dr. Heidgen Participates in Workshop

Dr. Martin F. Heidgen of Russellville participated in a workshop in July sponsored by the Council on National Security of the American Medical Association. He is a member of the American Hospital Association's Committee on Disaster Planning. Interstate Disaster Care and Federal Agencies in Civil Defense and Disaster were topics of discussion at the workshop.

Arkansas Breakfast at AMA Meeting

The annual breakfast sponsored by members of the Arkansas Medical Society during the clinical meetings of the American Medical Association was held June 22nd at the Fairmont Hotel in San Francisco, California. Miss America of 1964, Donna Axum of El Dorado, was a special guest. Former Congressman Walter H. Judd, M.D., of Minnesota, was the featured speaker and spoke on "The Doctor's Place in Public Affairs."

The following Arkansas physicians attended the breakfast: C. R. Ellis, R. B. Robins, James M. Kolb, Jack W. Kennedy, C. C. Long, Alfred Kahn, L. H. McDaniel, James W. Branch, A. S. Koenig, Ben N. Saltzman, E. M. Gray, D. W. Goldstein, W. A. Fowler, Frank Padberg, Louise Henry, Murphey Henry, Morriss Henry, J. H. McCurry, James Callaway, Ross Fowler, John Gray, Richard Ebert, Roger Vaughter and Carl Wilson. Mr. Bill Beaumont of Little Rock, president of the American Nursing Homes Association, was also present.

THE MONTH IN WASHINGTON—

Washington, D. C.—Congress for the first time has authorized funds for modernization and renovation of hospitals.

The modernization and renovation program was included in legislation that extends the Hill-Burton hospital construction program for five more years. The legislation easily won approval in both the House and Senate.

The extension provides $840 million for construction of hospitals and public health centers and for the modernization of health facilities.

Of that amount, $680 million is designated for construction and $160 million for modernization with a provision that up to $350 million of the construction funds can be switched to modernization if a state deems it preferable.

The new law also provides:

—$350 million for construction of long-term facilities, including nursing homes and chronic disease hospitals.

—$100 million for construction of diagnostic or treatment centers.

—$50 million for construction of rehabilitation facilities.

—$7.5 million in matching grants for areawide health facility planning in metropolitan and other areas. Under this project, states can use up to two per cent of their allotment to improve state administration of the construction program.

* * *

The Food and Drug Administration has ordered that drugs containing phenacetin (acetophenetidin) be relabeled to bear a warning against kidney damage. The order becomes effective Oct. 6, 1964.

The new labeling follows:

"Warning—This medication may damage the kidneys when used in large amounts or for a long period of time. Do not take more than the recommended dosage, nor take regularly for longer than 10 days without consulting your physician."

The labeling change was based on a report by a special advisory committee which concluded after a study of the pain-relieving drug that there is probable cause to conclude that misuse and prolonged use of the drug have been responsible for kidney lesions and disease.

The FDA also has banned and seized a number of "sustained action" or "time disintegration" cold capsules on charges of false claims. The agency said that the products are manufactured by only a few firms for distribution under more than 100 private brand names.

The over-the-counter products are generally labelled as providing up to 12 hours of continuous relief of excessive nasal discharge, running nose, watering of the eyes, swelling of the nasal tissues and stuffy congested feeling caused by the common cold and hay fever, the FDA said.

Dr. Joseph F. Sadusk, Jr., FDA Medical Director, said the seized products contain too little of active ingredients to be effective over a 12-hour period. Should a capsule contain an effective dose for a 12-hour period, he said, "a new drug" approval would be required to assure safety and efficacy.

The Public Health Service has approved the strengthening of influenza vaccines and is again urging that the so-called "high-risk" groups be inoculated against the respiratory disease—between Sept. 1 and Dec. 15 this year.

The PHS acted upon the recommendations of the special committee on immunization practices which reported that flu vaccines had been shown "in repeated control trials to confer a substantial protection (60 to 80 per cent)."

The incorporation of recent A_2 and B isolates in the 1963-64 vaccine and the increase in their concentration during 1964-65 should result in a vaccine capable of conferring substantial protection in 1964-65, the committee said. It was pointed out, however, that as yet there has been no opportunity to evaluate the newly constituted vaccine under conditions of a natural challenge.

The committee foresaw no major influenza outbreak in the United States this year but recommended inoculation since there is always a possibility of local outbreaks.

The committee recommended that immunization should be considered and generally recommended for persons in groups who experienced high mortality from epidemic influenza. The committee said such groups include:

"a) Persons at all ages who suffer from chronic debilitating disease, e.g., chronic cardiovascular, pulmonary, renal or metabolic disorders; in particular:
 "1. Patients with rheumatic heart disease, especially those with mitral stenosis (abnormal narrowing of one of the heart valves).
 "2. Patients with other cardiovascular disorders such as arteriosclerotic heart disease and hypertension, especially those with evidence of frank or incipient cardiac insufficiency.
 "3. Patients with chronic bronchopulmonary disease, for example, chronic asthma, bronchitis, bronchiectasis (degeneration and inflammation of the bronchial tubes), pulmonary fibrosis (scarring), pulmonary emphysema, and pulmonary tuberculosis.
 "4. Patients with diabetes mellitus (the common form) and Addison's disease (caused by malfunction of the adrenal glands).

"b) Persons in older age groups. During three successive recent epidemics a moderate increase in mortality has been demonstrated among persons over 45 years and a marked increase among those over 65 years of age.

"c) Pregnant women—It is to be noted that some increased mortality was observed among pregnant women during the 1957-58 influenza A_2 epidemic both in this country and abroad. It has not, however, been demonstrated in subsequent years."

THINGS TO COME

A Symposium in Occupational Skin Problems

The Institute of Industrial Health, University of Cincinnati, announces a Symposium in Occupational Skin Problems for physicians on October 12-October 15, 1964, at the Kettering Laboratory in Cincinnati, Ohio.

Conference on the Medical Aspects of Sports

The Sixth National Conference on the Medical Aspects of Sports, sponsored by the American Medical Association and the Committee on the Medical Aspects of Sports, will be held on November 29, 1964, at the Deauville Hotel, Miami Beach, Florida, in conjunction with the AMA Clinical Convention.

Southern Medical Association "Memphis Day" Program

The 58th Annual Meeting of the Section on Otolaryngology of the Southern Medical Association will be held November 16-19, 1964, at Memphis, Tennessee. The Closed Circuit TV Program for the Section on Otolaryngology will be produced and managed by Dr. John J. Shea of Memphis, Tennessee.

Thirty-Fourth Annual Fall Conference Oklahoma City Clinical Society

The Oklahoma City Clinical Society will open its Thirty-Fourth Annual three-day conference at the Sheraton-Oklahoma Hotel on October 26, 1964. An outstanding program of postgraduate teaching has been arranged.



PERSONAL AND NEWS ITEMS

Benton

In June Dr. Charles H. Stinnett, president of the Benton County Medical Society, presented a $300 check to the Benton County School of Retarded Children at Vaughan. The money is to be used to begin a Library of Instructional Aids for the teachers at the school. Dr. Stinnett expressed the hope that other organizations will visit the school and help keep this very worthwhile institution going.

Ouachita

Carla Sue Thompson of Stephens won first place in the Ouachita County Medical Society Essay Contest for 1964. She was presented with a $100 check by Dr. B. D. King, president of the local society. Second place winner was awarded $50 and the third place winner $25.

Doctors in Politics

Dr. Edward R. Annis, Miami, Florida, and Dr. R. B. Robins, Camden, Arkansas, appeared before the Democratic Party Platform Committee on the health plan at the Sheraton Park Hotel in Washington on Monday, August 17th.

Dr. Robins went to Atlantic City to attend the Democratic National Convention and wrote a daily newspaper column for a chain of newspapers (The Palmer Media) during the period of the convention. His column was entitled "Planks from the Boardwalk."

Dr. Crawley Heads Hospital Staff

The new chief of staff for Forrest Memorial Hospital in Forrest City is Dr. Charles E. Crawley, who assumed duties of the post July 1. Dr. William Hayden is vice-chief of staff and Dr. E. Morgan Collins is secretary.

Dr. Wilkins Heads State Association

Dr. Charles F. Wilkins of Russellville is the new president of the Arkansas Heart Association. In May he announced that research grants totaling $31,000 have been made by the association for Arkansas. Twenty-seven thousand, four hundred dollars was awarded to investigators at the University of Arkansas Medical Center in Little Rock and the remainder was granted to a research group in Fort Smith composed of Drs. Mendelsohn, Crow, and Snider.

Dr. Kelly's Daughter Receives Degree

Betty Lee Kelly received her Doctor of Medicine degree from the University of Arkansas School of Medicine in June. She will intern at Ben Traub Hospital at Texas Medical Center in Houston. Miss Kelly is the daughter of Dr. Miles Kelly of Sheridan.

Dr. Gillespie Honored in England

Dr. Edward Clark Gillespie, a Little Rock obstetrician and gynecologist, went to London, England, early in June, where he was formally admitted to the Royal College of Obstetrics and Gynecology. He was elected to the college while attending a meeting in London in January. Dr. Gillespie has practiced in Little Rock for 14 years.

Dr. Branch Has New Associate

Dr. James Spring, a native of Star City, entered general practice with Dr. James W. Branch of Hope on July 1. Dr. Spring is a graduate of the University of Arkansas School of Medicine. He interned at Birmingham's Lloyd Nolan Hospital and was a resident at the University of Alabama Hospital for one year.

Dr. King Serving as Acting Administrator

Dr. B. D. King, Radiologist of Camden, was appointed acting administrator of the Ouachita County Hospital at Camden upon the resignation of Administrator G. L. Crutchfield.

Arkansas Clinic Makes Addition to Staff

Dr. Joe Farmer, a Tuckerman native, has joined the staff of the North Arkansas Clinic at Batesville. He had practiced at Tuckerman for approximately one year before going to Batesville. Dr. Farmer was graduated from the University of Arkansas School of Medicine in 1962 and interned at St. Joseph's Hospital in Wichita, Kansas.

Dr. Chalfant Joins Clinic

Dr. Charles Chalfant, who has been practicing medicine at Rogers for the last two years, joined the Parker Clinic in Booneville in June. Dr. Chalfant graduated from the University of Arkansas Medical School in 1959 and completed his internship at St. Vincent Hospital in Little Rock. He served two years with the United States Public Health Service.

Dr. Dennis Resigns

Dr. James L. Dennis has resigned from the University of Arkansas School of Medicine staff to accept the position of dean and director of the Medical Center of the University of Oklahoma School of Medicine. At the University Medical Center in Little Rock, Dr. Dennis was professor of pediatrics and associate dean for clinical affairs. The resignation is effective September 1st.

Dr. Joseph Returns to Walnut Ridge

Dr. Ralph Joseph re-opened his office in Walnut Ridge on July 1 after completing a year's study in internal medicine at the University Medical Center and Veterans Administration Hospitals in Little Rock.

Dr. Wilson Locates in Harrison

Dr. Joe Bill Wilson has joined Drs. Hammon and Langston in the practice of general medicine and surgery in Harrison. He is a native of Harrison and he was graduated from the University of Arkansas Medical School in 1960. He interned at St. Vincent Hospital in Little Rock and was actively engaged in practice at the Air Force Academy Hospital for the past three years. He has been specializing in obstetrics for the past two years.

Dr. Walker Practicing in Arkadelphia

Dr. L. G. Walker announces his association with Drs. Anderson and Tilley of Arkadelphia in the general practice of medicine with special interest in Obstetrics and Pediatrics. He received his M.D. degree from the University of Arkansas Medical School in 1963 and completed his internship at St. Vincent Infirmary in Little Rock.

Dr. Sterling Honored

Dr. Harold W. Sterling, director of the Veterans Administration Hospital in North Little Rock and Little Rock, received a distinguished service award from the University of Arkansas Medical Center June 7th. The award was made by Storm Whaley, vice president for Health Sciences during graduation ceremonies at the Robinson Memorial Auditorium.

Dr. Monfort Opens Office

Dr. J. J. Monfort has opened an office at 120 West Board Street in Batesville for the practice of general surgery. Dr. Monfort was formerly with the North Arkansas Clinic.

Dr. Clark Heads Rotary

Dr. Curtis Clark of Sheridan is the new president of the Sheridan Rotary Club. He was installed in June.

New Physician in Sparkman

Dr. George D. Taylor opened his offices in the Sparkman Clinic July 1st. He was graduated from the University of Arkansas School of Medicine last year, and recently completed his internship at Confederate Memorial Medical Center in Shreveport.

Doctor Locates at Heber Springs

Dr. Mike Barnett has joined his uncle, Dr. J. C. Barnett, in the practice of medicine at Heber Springs. He is a native of Heber Springs who completed his internship in June.

Dr. Killough at Camden

Dr. Larry R. Killough has joined the staff of the Ouachita Clinic in Camden. He was graduated from the University of Arkansas School of Medicine in 1960 and has been stationed at the Blytheville Air Force Base for the past three years as Deputy Commander of the base hospital.

Dr. Martin Goes to Siloam Springs

Dr. James R. Martin, a native of DeWitt, has joined the medical staff at Siloam Springs Medical Center. He recently completed a rotating internship at St. Vincents Infirmary in Little Rock.

Beebe Doctor Attends Conference in British Isle

Dr. James D. Kinley, of Beebe, was among a group of 24 Polled Hereford breeders from the United States who attended the 1964 World Hereford Conference in June at Dublin, Ireland. He also took an extended tour of Ireland, Scotland and England.

Dr. Brown Moves to Nebraska

Dr. A. R. Brown, who has been connected with the Searcy Clinic since 1960, left in July for York, Nebraska, where he will be associated with York College. He will serve as college physician, teach Bible and biology, and do post graduate work in medicine at the University of Nebraska.

Dr. Goldstein Elected

Dr. D. W. Goldstein, Fort Smith dermatologist, was elected president-elect of the Fifty Year Club of American Medicine at the club's annual luncheon in San Francisco in June. Dr. J. H. McCurry of Cash, was re-elected secretary-treasurer of the club.

Dr. Russell Moves to Harrison

Dr. David M. Russell, who had practiced at Jasper for 12 years, announced the opening of his office in Harrison in July. He has a new office building adjacent to the Boone County Hospital.

Doctor Joins Clinic Staff

Dr. George W. Warren has announced the association of Dr. Robert M. Black of Huntsville, Texas, with the Warren Clinic in Smackover. Dr. Black recently completed his internship at the University of Arkansas Medical Center in Little Rock.

Searcy Clinic Gets New Doctor

Drs. Formby and Mattox of the Searcy Clinic announce the association of Dr. Jack R. Gardner with the clinic on July 1st. Dr. Gardner recently completed a two-year residency in Obstetrics and Gynecology at the University of Arkansas Medical Center.

Two Doctors Locate at McCrory

Two doctors who have just completed their internships at Little Rock opened office in McCrory in July—they are James E. Rowe and Basil E. Hendrixson. Both are graduates of the University of Arkansas School of Medicine.

OBITUARY

Dr. George Harrison Butler

Dr. George Harrison Butler died June 17th at his home in Fayetteville. He was 56 years of age. Dr. Butler was born in Liberty, Kansas, on July 7, 1907. He was one of six brothers, all of whom were physicians.

Dr. Butler attended the University of Mississippi and was graduated from the Tulane University Medical School. After interning at Santa Rosa Infirmary in San Antonio, he served a residency at Charity Hospital in Natchez, Mississippi. Upon completion of his residency, he entered private practice in Liberty, where he owned and operated a small hospital. During World War II, he served as a captain in the Army Medical Corps. He later returned to Tulane, where he had a teaching fellowship in the department of internal medicine. Dr. Butler went to Fayetteville in 1947, and was associated with the University Infirmary for several years, and practiced internal medicine.

He was a former president of the Washington County Medical Society and had served as chief of staff of Washington General Hospital. He was a member of the Arkansas Medical Society, American Medical Association, Southern Medical Association, American Society of Internal Medicine, the Musser-Burch Society of Tulane University, and was past president of the Arkansas Heart Association. He was a member of Kappa Sigma social fraternity and Phi Chi medical fraternity.

Dr. Charles E. Oates

Dr. Charles Everett Oates, 84, died June 16th at his home in North Little Rock. He was born in Martinville, Faulkner County. In 1906 he received his B.A. degree from the University of Arkansas, his M.D. from the University of Arkansas in 1914 and M.S. degree from the University of Chicago in 1916. He taught in high schools in Arkansas and Texas four years and was on the faculty of the University of Arkansas Medical School for twenty years. He was also dean of men at the University. Dr. Oates was associated with the Public Health Service in Hot Springs for 15

years and was on the rating board of the Veterans Administration until his retirement in 1949. He was a major in the Public Health Service during both World Wars. He was a member of the Pulaski County Medical Society, the Arkansas Medical Society, and the American Medical Association. He was a member and honorary elder in the Second Presbyterian Church of Little Rock.

Dr. Luther D. Reagan

Dr. Luther D. Reagan, age 83, died June 12th at a Little Rock hospital. He had retired in March after 56 years of practice.

Dr. Reagan was born at McNeil (Columbia County) and attended Ouachita College before entering the University of Arkansas School of Medicine. He interned at St. Vincent Infirmary and served on the medical staff there for more than 50 years. In 1925, he and nine other doctors took over the newly built Arkansas Baptist Hospital and operated it for two years as a clinic. He delivered the first baby born at Arkansas Baptist. Dr. Reagan was a life member of the Pulaski County Medical Society, the Arkansas Medical Society, and the American Medical Association. He was also a member of the Southern Medical Association. He was a deacon of Immanuel Baptist Church in Little Rock and a member of Pulaski Heights Masonic Lodge. Dr. Reagan is survived by his widow, a son, Dr. W. Paul Reagan of Little Rock, another son and two daughters.

Dr. Ewell Irving Thompson

Dr. Ewell Irving Thompson, 59, a Little Rock dermatologist, died June 30, 1964. He was a native of Johnson County, attended public schools in Clarksville and was graduated from Hendrix College at Conway and the Vanderbilt University Medical School in Nashville. He interned at the Missouri-Pacific Hospital in Little Rock and was in residency at the Barnes Skin and Cancer Hospital at St. Louis. He had practiced in Little Rock for 30 years.

He was a member of the Pulaski County Medical Society, Arkansas Medical Society, American Medical Association, American Academy of Dermatology, Little Rock Rotary Club, and the Second Presbyterian Church where he was on the Board of Deacons. Survivors include his widow, Mrs. Lura Mae Chaney Thompson, and a daughter, Ann Frances.



NEW MEMBERS

DR. CHARLES A. SMITH is a new member of Pulaski County Medical Society. A native of Texarkana, Texas, he received his pre-medical education from Vanderbilt University. He then enrolled at the University of Arkansas Medical Center from which he was graduated in 1958. He served his internship at the University of Arkansas Medical Center. Dr. Smith's specialty is obstetrics and gynecology and his office address is 500 South University in Little Rock, Arkansas.

A new member of Pulaski County Medical Society is DR. JOHN C. SCHULTZ. He was born at Little Rock and received his preliminary education from Loras College at Dubuque, Iowa, from which he received a B.S. degree. In 1959, he received his M.D. degree from St. Louis University School of Medicine. He served his internship at the University of Arkansas Medical Center. His office address is 900 North University in Little Rock. Dr. Schultz' specialty is internal medicine.

Pulaski County Medical Society announces that DR. BRYANT S. SWINDOLL is a new member. He is a native of Slate Springs, Mississippi, and he received his pre-med from the University of Mississippi. He was graduated from the University of Tennessee Medical School in 1941 and he served his internship at Methodist Hospital in Memphis, Tennessee. Dr. Swindoll practiced for 10 years at Tullahoma, Tennessee, and he is now with the Arkansas State Board of Health in Little Rock. His specialty is public health.

DR. MARION M. CHURCH is a new member of Pulaski County Medical Society. He was born at Little Rock, Arkansas, and received his preliminary education from the University of Arkansas. He received his M.D. from the University of

Arkansas Medical School in 1958. His internship was completed at the University of Arkansas Medical Center. Dr. Church's specialty is obstetrics and gynecology and his office address is 321 Maple in North Little Rock, Arkansas.

A new member of Pulaski County Medical Society is DR. DAVID A. MILES. Born at El Dorado, Arkansas, he received his pre-med at the University of Arkansas. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1952. He served his internship at University Hospital in Little Rock. Dr. Miles' office address is 300 East Roosevelt Road, Little Rock, Arkansas. His specialty is neurological surgery.

DR. LEWIS EUGENE POPE is a new member of Sebastian County Medical Society. He is a native of San Angelo, Texas, and received his preliminary education from Arlington State College in Arlington, Texas. His M.D. degree was received from the Tulane University School of Medicine in 1958. Dr. Pope is associated with Drs. Downs and Hewett in the practice of Urology at 522 South 16th Street, Fort Smith.

Pulaski County Medical Society announces that DR. EDWARD STEWERT ALLEN is a new member. A native of Little Rock, he received his pre-medical education from the University of Arkansas, from which he received a B.S. degree in 1954. He then enrolled at the University of Arkansas School of Medicine from which he was graduated in 1958. He served his internship at the University of Arkansas Medical Center and did graduate training in obstetrics-gynecology at the Medical Center also. Dr. Allen's office address is 411 North University Avenue in Little Rock, Arkansas.

DR. SHELTON FRANKLIN FOWLER is a new member of Pulaski County Medical Society. He is a native of Alabama and received his M.D. degree from Vanderbilt University School of Medicine in Nashville, Tennessee, in 1938. He served his internship at St. Thomas Hospital, Nashville, Tennessee. He served in the U. S. Army from 1941 until 1945. Dr. Fowler's specialty is psychiatry and he is at the Arkansas State Hospital, Little Rock, Arkansas.

Boone County Medical Society announces that DR. JOE BILL WILSON has been added to its roster of members. A native of Harrison, Arkansas, he received his pre-medical education from Little Rock Junior College and the University of Arkansas. He received his M.D. degree from the University of Arkansas School of Medicine in 1960. He completed his internship at St. Vincent Infirmary in Little Rock, Arkansas. He served in the U. S. Air Force from 1961 until 1964. Dr. Wilson is a general practitioner with his office at 205 West Rush in Harrison, Arkansas.

A new member of Ouachita County Medical Society is DR. GEORGE D. TAYLOR. Born at Sparkman, Arkansas, his preliminary education was received from the University of Arkansas. He then enrolled at the University of Arkansas School of Medicine and received his M.D. degree from there in 1963. Dr. Taylor is a general practitioner with his office at Sparkman Clinic in Sparkman, Arkansas.

DR. BASIL E. HENDRIXSON is a new member of Woodruff County Medical Society. He is a native of Judsonia, Arkansas, and attended Arkansas State Teachers College in Conway, Arkansas, from which he received a B.S. degree in 1953. He received his M.D. degree from the University of Arkansas School of Medicine in 1963 and served his internship at St. Vincent Infirmary, Little Rock, Arkansas. Dr. Hendrixson's office address is Third and Johnson, McCrory, Arkansas. He is a general practitioner.

A new member of Ouachita County Medical Society is DR. LARRY R. KILLOUGH. He is a native of Searcy, Arkansas, where he received his preliminary education. In 1960 he received his M.D. degree from the University of Arkansas School of Medicine. He practiced for three years in Blytheville, Arkansas. Dr. Killough's address is 530 Jefferson Street in Camden, Arkansas. He is a general practitioner.

DR. JOE D. BENNETT is a new member of Boone County Medical Society. A native of Bentonville, Arkansas, he received his pre-medical education from the University of Arkansas. He received his M.D. degree from the University of Arkansas School of Medicine in 1954. His internship was served at Central Dispensary and Emergency Hospital, Washington, D. C. He served in the U. S. Navy from 1945 to 1946. Dr. Bennett

practiced in Branson, Missouri, from 1955 until 1960. His office address is now Boone County Hospital, Harrison, Arkansas, where he is practicing radiology.

Boone County Medical Society announces that DR. FRED J. SVENDSEN is a new member. He was born at Omaha, Nebraska, and he received his pre-medical education from the Coast Guard Academy and Creighton University. He then enrolled at the University of Arkansas Medical School from which he was graduated in 1957. His internship was completed at Bethesda Naval Hospital. Dr. Svendsen served in the U. S. Navy from 1956 until 1963. His office address is Gaines Building, Yellville, Arkansas. He is a general practitioner.

A new member of Pulaski County Medical Society is DR. JOE H. BUMPAS. A native of Pine Bluff, Arkansas, he received his preliminary education from Arkansas A&M College. He was graduated from the University of Arkansas School of Medicine in 1960 and he served his internship at St. Vincent Infirmary in Little Rock, Arkansas. From 1962 until 1963 he served in the U. S. Army. Dr. Bumpas is an anesthesiologist and his office is at St. Vincent Infirmary, Little Rock, Arkansas.

Woodruff County Medical Society announces that DR. JAMES E. ROWE is a new member. He is a native of Leachville, Arkansas, and received his pre-medical education from Arkansas State College in Jonesboro, Arkansas. In 1963, he received his M.D. degree from the University of Arkansas School of Medicine. He then completed his internship at St. Vincent Infirmary in Little Rock, Arkansas. Dr. Rowe's address is Third and Johnson in McCrory, Arkansas. He is a general practitioner.

A new member of Crittenden County Medical Society is DR. WILLIAM LEE WINTERS. He is a native of Memphis, Tennessee, and he received his preliminary education from Harding College and from Arkansas State College. He received his M.D. degree in 1962 from the University of Arkansas School of Medicine. He served his internship at Baptist Memorial Hospital in Memphis, Tennessee. Dr. Winters' office is at Wright Clinic in Earle, Arkansas. He is a general practitioner.

DR. JACK REED GARDNER is a new member of White County Medical Society. He was born at Memphis, Tennessee, and received his pre-med education at the University of Arkansas. He then enrolled at the University of Arkansas School of Medicine and received his M.D. degree from there in 1961. He completed his internship at St. Vincent Infirmary in Little Rock. Dr. Gardner is a general practitioner with his office at Searcy Clinic in Searcy, Arkansas.

ANSWER—Electrocardiogram of the Month

INTERPRETATION:

RATE: 95 RHYTHM: Sinus

PR: .18 QRS: .08 QT: ---

ABNORMAL. The prominent U waves which have fused with T, together with the ST-T abnormalities, are quite characteristic of severe hypokalemia.

COMMENT: This was one of a series of traces on this patient whose tracing returned to normal following treatment.

ANSWER—What's Your Diagnosis?

DIAGNOSIS: Infantile Cortical Hyperostosis (Caffey's disease)

X-RAY FINDINGS: There is extensive periosteal new bone growth involving the entire mandible causing the mandible to be 3 to 4 times thicker than normal. Some areas are slightly laminated. Bone survey revealed similar changes in several ribs. The etiology of the disease is unknown and gradual spontaneous healing occurs.



BOOK REVIEWS

Christopher's TEXTBOOK OF SURGERY, Eighth Edition, illustrated, edited by Loyal Davis, M.D., Professor of Surgery, Northwestern University Medical School, pp. 1481, published by W. B. Saunders Company, Philadelphia and London, 1964.

This Textbook of Surgery is an outstanding volume as have been the previous seven editions. The text is edited by Dr. Loyal Davis. A group of outstanding surgeons have contributed various chapters. There are excellent references. There are a moderate number of diagrams and films. This book is not intended to be a manual of surgical technique. This outstanding book is heartily recommended to all physicians and medical students. AK

PHYSICAL EXAMINATION OF THE SURGICAL PATIENT, Third Edition, by J. Englebert Dunphy, M.D., F.A.C.S., Professor of Surgery, University of California School of Medicine, San Francisco, and Thomas W. Botsford, M.D., F.A.C.S., Assistant Clinical Professor of Surgery, Harvard Medical School, Senior Associate in Surgery, Peter Bent Brigham Hospital, Associate in Surgery, Children's Medical Center, pp. 396, published by W. B. Saunders Company, Philadelphia and London, 1964.

This textbook is, as it purports to be, confined to teaching the proper type of physical examination of the surgical patient. It is well written. There are a moderate number of drawings and films. There are some references. This book is of interest principally to the second and third year medical student and should prove exceptionally valuable to the medical student. It is not recommended to the practicing physician. AK

CANCER OF THE STOMACH by William H. ReMine, M.D., M.S. in Surgery, F.A.C.S., Head of a Section of Surgery, Mayo Clinic; Assistant Professor of Surgery, Mayo Foundation, Graduate School, University of Minnesota, James T. Priestley, M.D., M.S., in Experimental Surgery, Ph.D. in Surgery, F.A.C.S., Head of a Section of Surgery, Mayo Clinic; Professor of Surgery, Mayo Foundation, Graduate School, University of Minnesota, and Joseph Berkson, M.D., D.Sc., Head of the Section of Biometry and Medical Statistics, Mayo Clinic; Professor of Biometry and Medical Statistics, Mayo Foundation, Graduate School, University of Minnesota, illustrated, pp. 255, published by W. B. Saunders Company, Philadelphia and London, 1964.

This is a short volume written by various staff members of the Mayo Clinic. It is only 255 pages long. It is well written and, of course, discusses quite thoroughly the problem of gastric cancer, including history, diagnosis, surgical procedures, postoperative care, etc. There is a fine statistical summary by Joseph Berkson. This is an interesting book written in an easy to read style and it is heartily recommended to the practicing physician. AK

Side Effects of Long-Term Treatment With Corticosteroids and Corticotrophin

B. L. J. Treadwell et al (West London Hosp, London) *Lancet* 1:1121 (May 23) 1964

A prospective study of 110 patients with rheumatoid arthritis was carried out from 6 to 111 months to observe the frequency and severity of side effects. Corticosteroids were used continuously in 68 patients and corticotrophin continuously in 60; 18 received each drug at different times, and they were included in each group. In the corticosteroid-treated group the commonest side effects were bruising, mooning, and dyspepsia. With corticotrophin treatment, severe side effects were rare. There were some androgenic effects; 3 of 24 had amenorrhea, and 4 of 60 had acne. Every patient who experienced dyspepsia had received either salicylates or phenylbutazone in addition. Side effects were commoner in women and with the use of corticosteroids, and they increased with duration of treatment and dosage. Neither trend was observed with corticotrophin. Relation of side effects to age was observed with neither drug. The complications caused by corticosteroids rarely warrant withdrawal of the drug.

Iron Absorption: Intestinal Regulatory Mechanisms

M. S. Wheby, L. G. Jones, and W. H. Crosby *J Clin Invest* 43:1433 (July) 1964

The kinetics of iron absorption have been studied in rats. The results indicate that duodenal epithelial mucosal cells possess an absorptive mechanism responsive to body iron requirements and which within limits is capable of regulating iron absorption. This regulating mechanism has, in the past, been referred to as "mucosal block." With small, physiological amounts of iron, the absorptive mechanism shows kinetics compatible with an enzyme mediated process and the amount absorbed is not directly related to the dose. With larger amounts of iron, the capacity of this process is exceeded and the kinetics change to those suggestive of passive diffusion in which the amount absorbed increases directly with dose. The mechanism operating with small doses consists of two steps, (1) mucosal uptake and (2) mucosal transfer of iron to plasma. Both steps are involved in the regulatory mechanism, but step 2 is more rate limiting and more affected by state of the body iron stores and by prefeeding iron.

TUBERCULOSIS  ABSTRACTS

Sponsored by Arkansas Tuberculosis Association

CLINIC FOR PREVENTING CHRONIC BRONCHITIS

An experimental clinic was set up in an attempt to control such factors as respiratory irritation and infection in the early stages of chronic bronchitis. The experiment demonstrated that such a preventive clinic can be operated satisfactorily.

C. H. Wood, M.B., *and* Susan H. Meadows; *British Medical Journal,* November 2, 1963.

In the management of patients with chronic bronchitis all practicable measures to reduce respiratory irritation and infection are usually undertaken, but these measures are seldom applied until irreversible disease is well advanced.

In an attempt to stop or slow down the progress of the condition by applying such measures to those in the earliest stages of chronic bronchitis, an experimental clinic was established four years ago at a health centre in Willesden. The clinic had the active support of a local hospital, a chest clinic, the public health service, and a number of general practitioners.

The principal aims of the clinic were to (1) reduce irritation of the respiratory tract by helping patients to stop smoking and by teaching them practical steps to reduce the damage done by air pollution; (2) combat infection by the use of influenza vaccine and antibiotics; and (3) teach them to improve their breathing by daily exercises.

The clinic differed in two important respects from the accepted pattern of general-practitioner consultation or hospital out-patient attendance. Changing of habits was considered more important than dispensing of drugs, and patients were not necessarily ill or disabled.

The most suitable time for the clinic was found to be from 7 to 9 p.m. The patients were seen in groups of 10 to 20 rather than individually. This not only involved each patient for two hours each evening but helped to disguise the educative function of the clinic by creating a social atmosphere.

On the first evening there was an introductory talk on the symptoms, natural history, and what is known of the etiology of chronic bronchitis. Breathing exercises were also started. A questionnaire on respiratory symptoms was completed and forced expiratory volume (FEV_1) was measured.

At subsequent sessions time was allotted for physiotherapy in order to mobilize the chest and shoulders, to encourage abdominal breathing, and to improve posture and teach relaxation.

Those who came regularly to the course of six sessions were given 12 tablets of tetracycline on the last evening with detailed instructions on how to take them at the onset of a chest infection. They were told to see their own doctor if the infection had not been controlled before the tablets ran out and to replenish their supply for use in a subsequent attack.

The known facts about smoking and bronchitis, lung cancer, and other diseases were explained by means of talks and films and by demonstrating pathological specimens. Ex-smokers in the group were witnesses that many people have stopped smoking.

Patients who completed the course were invited to return whenever they liked and for at least one evening each autumn for a "refresher" course.

During the first two winters 165 men attended the clinic. Of these, 56 were referred by their personal physicians, 54 by industrial medical officers, 17 from a mass X-ray unit, 12 from a chest clinic, and the remainder from a variety of sources. The patient's physician was always consulted.

Most of the patients said that they had had at least one chest illness, usually called bronchitis, which had kept them from work in the past three years. All but 30 said they had either persistent cough or phlegm. Most of the 30 had had recurrent chest illnesses associated with wheezing respiration.

ATTENDANCE ANALYZED

Of the 128 patients who attended the clinic at least twice, 91 returned specimens of early morning sputum; 34 of these produced more than 5 milliliters of sputum and 20 produced mucopurulent or purulent sputum. Despite the attempt to concentrate on early cases who were not disabled, there were 18 men who said they sometimes had to stop for breath while walking at their normal pace on the level. A quarter of those referred to the clinic were non- or ex-smokers.

The demonstration of the fact that a preventive clinic of this nature can be run is important. Many had been advised only to come and see what it was like. It was explained to them that they would have to attend regularly for four more sessions if they were to obtain any benefit. Of the 128 who attended a second time, only 15 failed to attend four sessions. The lapse rate was slightly greater among the younger patients and among heavy smokers.

The extent to which advice was followed on specific points was determined at the end of two years to be:

Breathing Exercises: Among 109 patients, 31 (28 per cent) said that they did their exercises regularly and a further 57 (52 per cent) said they were doing them during their normal activities.

Tetracycline. Of the 106 who had been given tetracycline tablets, 46 reported having the type of episodes for which they had been told to take the tablets. Of these, 37 (80 per cent) took them on one or more occasions, a further two took other appropriate measures on their doctor's advice, and seven failed to take them.

"Smog" Bottle. These were wick-type bottles containing a mixture of ammonia and ethyl alcohol that would neutralize the acidity atmosphere in a room in times of fog. However, there were so few occasions when the bottles might have been used that no assessment of their efficacy was possible.

Smoking. Of the 77 smokers, 28 (36 per cent) had stopped smoking; 24 (31 per cent) were smoking less; 24 (31 per cent) were smoking the same, and 1 (1 per cent) had increased. One ex-smoker had started again.

Influenza Vaccination. Approximately 40 patients, a high proportion of those attending before Christmas each year, were given anti-influenza vaccine. No attempt was made to assess the value of this measure by itself.

PATIENTS INTERESTED

The most encouraging aspect of the work of the clinic was the interest shown by those who attended regularly. It became apparent that many with established bronchitis understand the progressive nature of their disease and are distressed about it and well aware of the uselessness of imbibing bottles of cough medicine. The presence at the clinic of a few established cases, together with pathological specimens taken from advanced cases, helped to emphasize the progressive nature of the disease to those in the early stages. However, the presence of too many established cases would probably deter the younger and earlier patients from coming.



Hemolytic Complement in Synovial Fluids

T. J. Pekin, Jr., and N. J. Zvaifler (Georgetown University Hosp, Washington, DC) *J Clin Invest* 43:1372 (July) 1964

Altered immunologic activity has been suggested as an etiological factor in rheumatoid arthritis. Increased levels of hemolytic complement C′ was a discordant finding. Hemolytic complement C′ activity having been demonstrated in normal synovial fluid, this study was done to investigate whether synovial fluid C′ activity might more closely reflect pathological conditions in joints than does serum C′. Simultaneous serum and synovial fluid proteins, rheumatoid factor and C′ activity were determined. Over 120 observations on effusions resulting from a variety of joint diseases were done. In inflammatory conditions the mean values of synovial fluid C′ were for rheumatoid arthritis 43, gout 102, and Reiter's syndrome 158. Fluids from other than rheumatoid arthritis patients demonstrated a direct relationship between C′ levels and protein concentration; rheumatoid fluids did not. Nonrheumatoid fluids showed higher C′ activity with higher cell counts; rheumatoid fluids showed low C′ and high cell count. Thus C′ levels in rheumatoid arthritis cannot be explained by the degree of inflammation, nor the amount of protein in the joint. The low C′ in rheumatoid arthritis effusions supports the concept of a local reaction utilizing or destroying C′.

November, 1964

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Vol. 61 No. 6

FORT SMITH, ARKANSAS

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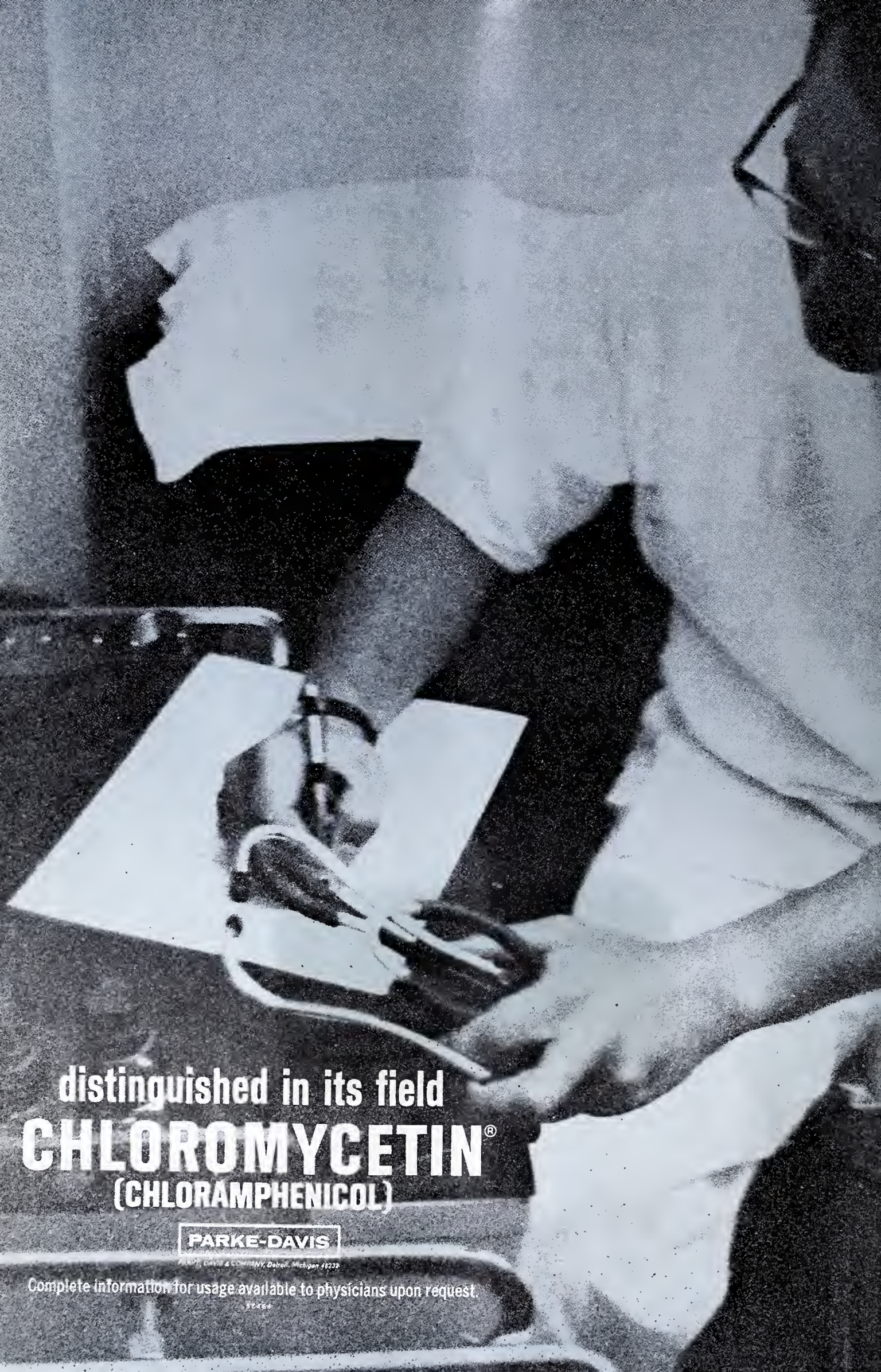
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BRIEF SUMMARY

'SOMA' COMPOUND; 'SOMA' COMPOUND plus CODEINE: carisoprodol, acetophenetidin, caffeine, codeine phosphate. *Warning: Codeine may be habit-forming.* **Indications:** 'Soma' Compound and 'Soma' Compound with Codeine are indicated for relief of pain and stiffness in traumatic, rheumatic and other similar conditions. **Contraindications:** Allergic or idiosyncratic reactions to carisoprodol or codeine. **Precautions:** *Acetophenetidin*—May damage the kidneys when used in large amounts or for long periods. *Codeine*—Should be used with caution in addiction-prone individuals. *Carisoprodol*—Like other central nervous system depressants, should be used with caution in patients with known propensity for taking excessive quantities of drugs and in patients with known sensitivity to compounds of similar chemical structure, e.g., meprobamate. **Side effects:** *Codeine*—Nausea, vomiting, constipation, and miosis. *Carisoprodol*—The only side effect reported with any frequency is drowsiness, usually on higher than recommended doses. One instance each of pancytopenia and leukopenia occurring when carisoprodol was administered with other drugs has been reported as has an instance of fixed drug eruption with carisoprodol and subsequent cross-reaction to meprobamate. Rare allergic reactions, usually mild, have included one case each of anaphylactoid reaction with mild shock and angioneurotic edema with respiratory difficulty, both reversed with appropriate therapy. Other rarely observed reactions have included dizziness, ataxia, agitation, increase in eosinophil count, and gastrointestinal symptoms. Massive overdosage may produce coma and/or mild shock and respiratory depression. **Dosage:** 'Soma' Compound and 'Soma' Compound with Codeine, one or two tablets three times daily and at bedtime. **Supplied:** 'Soma' Compound, orange tablets, each containing carisoprodol 200 mg., acetophenetidin 160 mg., and caffeine 32 mg. 'Soma' Compound with Codeine, white, lozenge-shaped tablets, each containing carisoprodol 200 mg., acetophenetidin 160 mg., caffeine 32 mg., and codeine phosphate 16 mg. Narcotic order form required. *Before prescribing, consult package circular.*

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Differential Diagnosis and Management of Headaches*

Wm. I. Porter, M.D.**

Your program committee has chosen a timely subject for discussion. Although the problem of headaches is as modern as this jet age of ours, it is also as ancient, perhaps, as the human race.

In my preparation for this meeting, I was amazed again to learn of the countless causes of headache and head pain; and, according to the many authorities on the subject, the unlimited medications available to us that give the sought for relief. The number of causes may be academically reduced to only a few. Therapeutic preparations (beyond those advertised on television) also shrink to a minimum when we are reminded by more sober authors that headache is a symptom, and not a disease.

I would like to give you a quotation by the late Harold G. Wolff:

"Since the human animal prides himself on 'using his head,' it is ironic and perhaps not without meaning that his head should be the source of so much discomfort. Though pain always means 'something wrong,' with headache, it most often means 'wrong direction' or 'wrong pace'—a biologic reprimand rather than a threat."

The headache patient is to the physician oftentimes a headache. Headache may be just as intense from malignant as from benign causes; and, though there are few examples in human experience where so much pain may indicate so little in terms of organic tissue injury, failure to separate the ominous from the trivial may cost life or create paralyzing fear.

The most commonly encountered headaches are vascular headaches and the headaches from sustained muscle contraction associated with anxiety and emotional tension. The headaches associated with fever and septicemia probably rank next in frequency, and then come those due to nasal and paranasal, ear, tooth, and eye disease. The headaches of meningitis, subarachnoid hemorrhage, brain tumor and brain abscess, though important and dramatic, are less common.

Headache is almost invariably associated with disturbances of function and/or structure in tissues within or adjacent to the cranium.

Although the brain itself is insensitive to painful stimuli, there are structures within the skull that are responsive to afferent pain stimuli. These are:

1. Great venous sinuses and their venous tributaries from the surface of the brain;
2. Parts of the dura at the base;
3. Dural arteries—notably the middle meningeal;
4. Cerebral arteries at the base of the brain;
5. Intracranial portion of nerves carrying pain afferents—5th, 7th, 9th, 10th, and the upper two or three cervical nerves.

Cerebrospinal fluid pressure, per se, is not directly related to headache.

From clinical and experimental data, it has been ascertained that a variety of mechanical stresses upon pain-sensitive tissues evoke headache. The following six basic mechanisms of headache from intracranial sources are clinically important:

1. Traction on the venous tributaries to the venous sinuses from the surface of the brain and displacement of the great venous sinuses;
2. Traction on the middle meningeal arteries;
3. Traction on the large arteries at the base of the brain and their main branches;
4. Direct pressure by tumors on the cranial and cervical nerves containing pain afferent fibers from the head;
5. Inflammation in or about any of the pain-sensitive structures of the head, and the pia and dura at the base of the brain;
6. Distention and dilatation of intracranial ar-

*Presented at the 88th Annual Session of the Arkansas Medical Society May 1964, Hot Springs, Arkansas.

**500 South University, Little Rock.

teries.

The first four mechanisms are more commonly associated with headaches of cerebral tumor.

The physician, in this case the neurosurgeon, should be on the alert when severe and/or persistent headache begins suddenly in a patient who has not previously had headache.

Vague or specific and usually progressive headache is seen in cerebral abscess. Progressive neurological signs and symptoms are usually noted and the patient shows increasing evidence of cerebral failure. Cerebral abscess should be suspected when cerebral manifestations accompany septicemia, bronchiectasis, lung abscess, purulent sinusitis, penetrating wounds of the head, compound fractures of the skull, etc.

Lumbar puncture is of value, if caution is observed, to determine if the cerebral tension is increased, or if meningitis is also present. Encephalogram or arterial studies are then essential to determine the presence of a mass displacing lesion. Craniotomy has to be then considered.

Skilled indeed, is the physician who can make the preoperative diagnosis of a subdural hematoma of the chronic type. The usual diagnosis is that of cerebral vascular insufficiency or occlusive disease or cerebral tumor. The history of trauma is more often than not very uncertain. Cerebral arteriography is quite accurate for diagnosis and localization of the subdural hematoma. Multiple burr holes or craniotomy for evacuation or removal of the hematoma are then done as quickly as feasible.

Intracerebral hematoma usually does not cause severe headache unless the brain is greatly distended or the blood ruptures into the subarachnoid space. A history here of arterial hypertension, sudden loss of consciousness, along with hemiplegia, is almost sufficient for accurate diagnosis. Supportive therapy, lumbar puncture, and prayer are usually the best type of treatment. However, if the patient shows signs of a progressive mass lesion, diagnostic studies and decompression may be required.

The head pain associated with spontaneous subarachnoid hemorrhage is probably the most severe of pain from intracranial sources with the possible exception of meningitis. As you know, the onset is quite sudden with severe occipital headache, loss of consciousness, convulsions, respiratory distress, decerebration, and even death. The history and lumbar puncture are usually sufficient for diagnosis. Immediate or delayed cerebral arteriography will show the probable source of the hemorrhage. The decision regarding therapy then has to be made. The path for the neurosurgeon from here on is a difficult one, in that he has to decide whether purely nonsurgical, cervical carotid ligation, or intracranial approach should be advised. If the hurt brain can survive the initial insult is the most vital point concerning the future course. Much is being done about this problem, and there is no wide agreement in the method of treatment.

When one considers the headache due to inflammation, may I mention the following:

1. Meningitis. Headache is rather severe and disabling. Photophobia is frequent. Movement of the head is very painful. Pain is less in the prone than in the erect position. The throbbing from each cardiac systole seems to stem from the irritated arteries at the base of the brain. Inflammatory involvement of the structures in the posterior fossa and upper cervical nerve roots account for the painful contracture of the nuchal and occipital musculature.
2. Localized inflammation of the dura is infrequently seen. This is found in suppurative diseases of the frontal, ethmoid, and sphenoid sinuses or mastoid air cells.

Diagnostic lumbar puncture for pressure determination, and cerebrospinal fluid studies and organism identification and drug sensitivity tests is indicated. Antibiotic and chemotherapy is used. Surgical drainage and radical surgery is not usually done until the acute phase has subsided.

Post-spinal puncture headache should be mentioned. You are all familiar with this distressing problem, and I have no comment in regard to prevention or specific treatment.

Brain tumors could be discussed for several days. This lesion is always in the mind of the patient or his physician when headache persists. History is all important, abnormal neurological findings, and papilloedema certainly should give a warning sign to us all. Hospitalization for x-rays and diagnostic studies is necessary. Encephalographic air studies, brain scanning with radio isotopes, electroencephalogram, and arteriography are used selectively for localization. Craniotomy then follows if the diagnosis of cerebral tumor is made. For inoperable lesions, other decompressive procedures are helpful.

Headaches from extracranial causes should be briefly discussed. These could be classified as:

1. Vascular headaches:
 a. Migraine type;
 b. Atypical facial neuralgia;
 c. "Occipital neuralgia."
2. Muscle contraction headache.
3. Headaches and diseases of the eyes, ears, nose, teeth, and paranasal sinuses.
4. True neuralgias;
 Post herpetic neuritides.
5. Cranial artery inflammation.
6. Trauma, infection, and new growths of the extracranial tissues.

Let us not despair. The problem of headache will be with us for a long time to come. May God give us the skill and insight to find the cause for this age old malady. Then let us do what we can, as best as we can, to help these people.

The Carcinoid Crisis

M. E. Kahil, H. Brown (Baylor University College of Medicine, Houston), and H. L. Fred, *Arch Intern Med* 114:26 (July) 1964

A woman with the carcinoid syndrome in whom a bout of flushing was accompanied by profound hypotension and striking pruritus and hyperesthesisas was seen. Levarterenol accentuated her symptoms and failed to produce a pressor response. Subsequently, the intravenous administration of an antiserotonin compound (cyproheptadine) was followed by immediate subjective relief as well as by a return of the blood pressure to normal levels. The occurrence of peripheral vascular collapse as an occasional manifestation of the malignant carcinoid syndrome is emphasized, and its management is briefly discussed.

* * * * *

The Thyroid Scintiscan in the Differentiation Between Benign and Malignant Thyroid Nodules

J. E. Sokal (Roswell Park Memorial Institute, Buffalo) and K. Skimaoka, *Arch Intern Med* 114:36 (July) 1964

The findings in thyroid scintiscans of 169 patients with nontoxic nodular goiter are reviewed and correlated with clinical and histological data. None of the "hot" nodules contained cancer, and the majority of the malignant lesions were "cold." However, the majority of the benign nodules were also "cold." Identification of a thyroid nodule as hypo-functioning depended principally on its size; whether benign or malignant, larger masses were usually read as "cold," while smaller ones could not be distinguished from normal thyroid tissue. Since only 7% of the nontoxic nodular goiters contained "hot" nodules, the scintiscan could not contribute to the differentiation between the benign and the malignant goiter in the great majority of patients.

* * * * *

Estrogenic Hormones, Urethral Cornification, and Arteriosclerotic Vascular Disease in Men

F. G. Dalldorf (North Carolina Memorial Hosp., Chapel Hill), *Amer J Clin Path* 42:64 (July) 1964

A cytological study of urinary sediments from 70 selected men patients over 40 years of age is presented. A significant inverse correlation was demonstrated between the presence of large numbers of superficial, mature squamous cells in the urine and the prevalence of arteriosclerotic vascular disease. This relation is interpreted as a manifestation of varying levels of endogenously produced estrogenic hormones in men. High levels of such hormones in men result in squamous metaplasia and cornification of the urethra, and, at the same time, inhibit the development of arteriosclerosis.

REPRINT ARTICLES

Reprints of Scientific Articles appearing in the Journal should be ordered within ten days after date of publication as the type is thrown in at that time.

Analysis of Arkansas Snakebites

Henry M. Parrish, M.D., Dr.P.H.

Arkansas has the highest annual snakebite rate of the states west of the Mississippi River. The leading annual poisonous snakebite rates per 100,000 population for these states are found in Arkansas (17.19), Texas (14.70), Louisiana (10.25) and Oklahoma (8.85). It is noteworthy that all of the states are members of the West South Central Region of the United States. However, only three people in Arkansas died from poisonous snakebites during the ten year period, 1950-1959.[1] Very little has been written about the snakebite problem in Arkansas. Therefore, it seemed worthwhile to make a statewide analysis of snakebites for the following purposes: (1) to define the epidemiology of poisonous snakebites in Arkansas; (2) to relate some medical findings associated with these bites; and (3) to review briefly current concepts of snakebite treatment.

Poisonous Snakes

According to Conant,[2] the following species and sub-species of poisonous snakes are indigenous to Arkansas: the western diamondback rattlesnake *(Crotalux atrox)*, the timber rattlesnake *(Crotalus horridus horridus)*, the canebrake rattlesnake *(Crotalus horridus atricaudatus)*, the western pigmy rattlesnake *(Sistrurus miliarius streckeri)*, the northern copperhead *(Agkistrodon contortrix mokeson)*, the southern copperhead *(Agkistrodon contortrix contortrix)*, the western cottonmouth moccasin *(Agkistrodon piscivorus leucostoma)*, and the Texas coral snake *(Micrurus fulvius tenere)*. Thus, there are eight species or subspecies of poisonous snakes in Arkansas.

Arkansas has each of the four major kinds of venomous snakes found in the United States. With the exception of the coral snake, they are all pit vipers. They are so named because of a characteristic pit which is located between the eye and nostril on each side of the body. Pit vipers also are identified by elliptical pupils and by two well-developed fangs which protrude from the maxillae when the snake's mouth is opened. Rattlesnakes have rattles which are attached to their tails. Copperheads, cottonmouth moccasins and harmless snakes do not have rattles. Harmless snakes do not have facial pits; they have round rather than elliptical pupils, and while they have teeth, they lack fangs.

Oftentimes people will chop off the head of a snake which has bitten someone and bring the snake's body in for identification. Pit vipers can be identified by turning the snake's belly upwards and noting a single row of subcaudal plates just below the anal plate. Harmless snakes have a double row of subcaudal plates.

The coral snake is a beautifully colored small snake which has broad rings of scarlet and black separated by narrow rings of yellow. An easy way to remember this is, "red next to yellow will kill a fellow." It is important to remember that the coral snake's *snout is always black*. Several harmless snakes resemble coral snakes but their snouts are usually grey or red, and the yellow and red bands on their bodies are separated by black bands. Coral snakes have round pupils and they lack facial pits.

Methods of Study

A questionnaire and letter explaining the purpose of this study were mailed to a "selected" group of Arkansas hospitals listed in Hospitals (Journal of the American Hospital Association) Guide Issue. The hospitals selected for this study were general hospitals, children's hospitals and college infirmaries. Army, Navy, Coast Guard, Public Health Service, Air Force and Veterans Administration hospitals also were sent questionnaires. Maternity, tuberculosis and mental hospitals were omitted as they would not be expected to treat snakebite victims. A total of 78 Arkansas hospitals comprise the study group. Each hospital was requested to report all in-patients admitted to the hospital for snakebite treatment during 1958 and 1959.

Most hospitals do not code and tabulate the diagnoses of emergency room and out-patient clinic visits. Since some snakebite victims are not admitted to the hospital as in-patients, it seemed essential to ask a sample of practicing physicians how many snakebite victims they treated on both an out-patient (office, home, emergency room, etc.) and on an in-patient basis. Previous sur-

From the Department of Community Health and Medical Practice, School of Medicine, University of Missouri, Columbia, Missouri. This investigation was supported in part by Public Health Service Research Grant GM 11268-02 from the Division of General Medical Sciences, Public Health Service.

veys,[3,4] have shown that most people with venomous snakebites are treated by general practitioners, surgeons, internists, pediatricians, and orthopedic surgeons. Therefore, a random sample of one-third of all the Arkansas physicians in these categories of practice who were listed in the A. M. A. American Medical Directory were sent questionnaires.

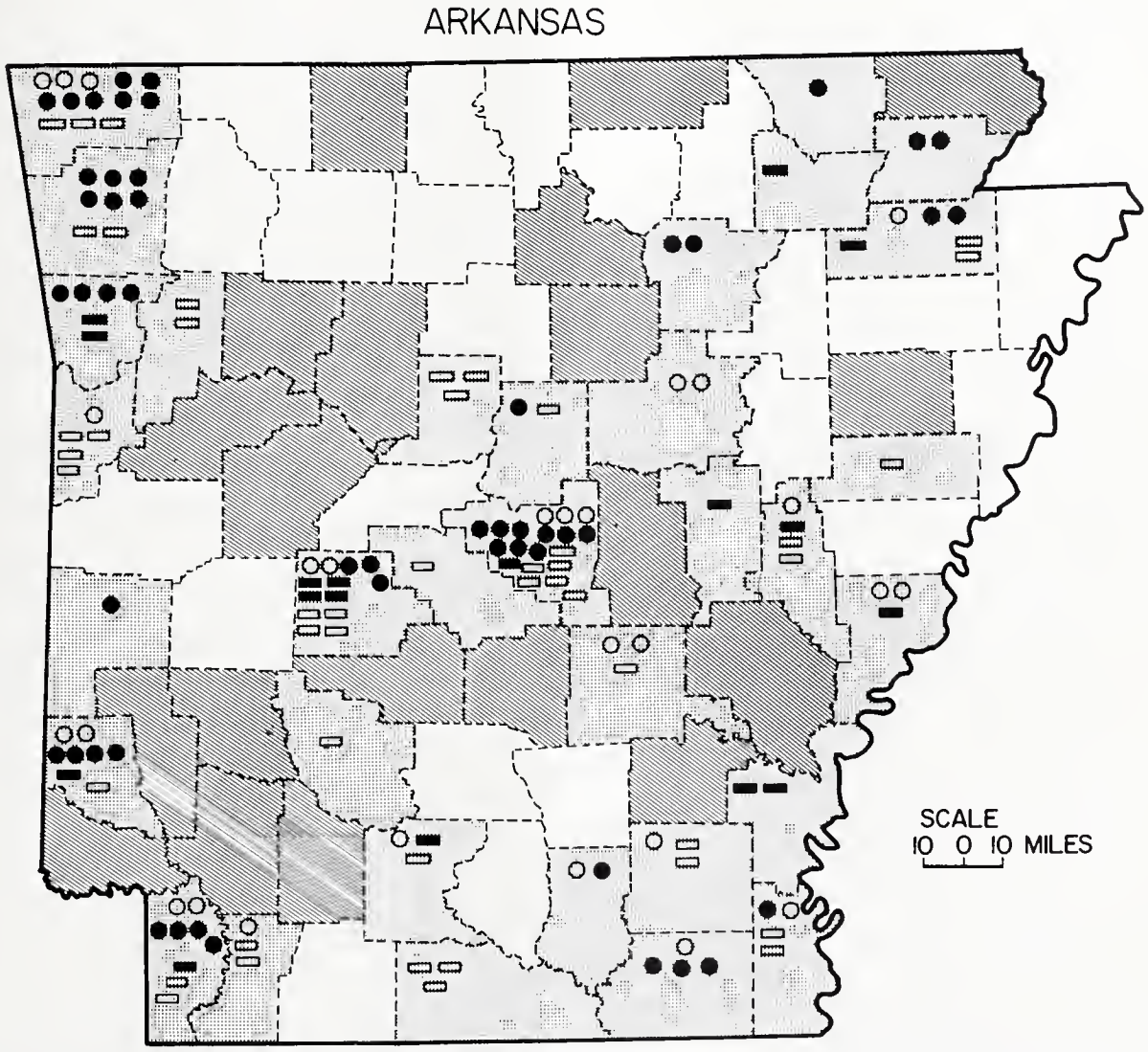
Death certificates for fatal snakebite cases were obtained from the Arkansas State Board of Health.

Results

This report is based on questionnaires returned by 72 (92 per cent) of 78 Arkansas hospitals. It is supplemented by questionnaires returned by 286 (69 per cent) of 413 practicing physicians in the State. The Arkansas State Board of Health indicated that there was one snakebite death during 1959 and none during 1958.

INCIDENCE—Arkansas hospitals reported a total of 156 in-patients treated for poisonous snakebites during 1958 and 1959. There were 63 cases in 1958 and 79 cases in 1959—an average of 71 cases per year. Of the 156 snakebites reported during 1958 and 1959, detailed case reports were received for 142 patients and only numbers of bites were reported for 14 cases. *All of the analyses in this paper, excluding the estimate of incidence, were based on the 142 detailed case reports received from hospitals.*

Physicians' reports, when adjusted to account



for all Arkansas physicians in the practice categories mentioned, indicated that approximately 152 in-patients and 155 out-patients were treated for snakebite accidents each year. The difference between the estimate of 152 in-patients treated by physicians and the average of 71 in-patients reported by hospitals can be explained, in part, by the following facts: (1) six Arkansas hospitals did not participate in the study; (2) eight counties from which physicians reported snakebites did not have hospitals listed in the Hospitals Guide Issue; (3) there was evidence of under reporting snakebite in-patients from four hospitals which participated in the study; and (4) physicians indicated that many in-patients were treated in small clinics and hospitals not listed in Hospitals Guide Issue. Taking all of these various reports into consideration, I estimate that approximately 307 (152 in-patients and 155 out-patients) people are treated annually for poisonous snakebites in Arkansas. This provides an incidence of 17.19 bites per 100,000 population per year.

GEOPATHOLOGY—The geographical distribution of snakebites reported in Arkansas during 1958 and 1959 may be seen in the map. The lightly shaded counties are those from which hospitals reported in-patients treated for snakebites. An appropriate symbol is used to mark each hospitalized patient who was bitten by a specific kind of snake. The darker shaded counties are those counties from which physicians reported snakebite cases, but from which no cases were reported by hospitals.

Of 142 people hospitalized for snakebite treatment for whom detailed records were available, 51 (36 per cent) were bitten by copperheads, 27 (19 per cent) by rattlesnakes, 17 (12 per cent) by cottonmouth moccasins, and 47 (33 per cent) by unidentified poisonous snakes. There were no coral snake bites reported.

The map shows that snakebites were reported from all sections of the State. Copperhead bites were reported more frequently from the central and western parts of Arkansas. Rattlesnake and cottonmouth moccasin bites were distributed rather evenly throughout the State. There were three multi-county foci where snakebites were especially frequent: (1) the Benton-Washington-Crawford County area in the northwestern section of Arkansas; (2) the Pulaski-Garland County area in the central part of the State; and (3) the Miller-Sevier County area in the southwestern part of the State.

TEMPORAL RELATIONSHIPS—The monthly distribution of snakebite accidents is shown in Table 1. Snakebites were infrequent during the colder months of the year—November, December, January, February and March. In general, snakes are usually inactive and/or hibernating during the colder months. Most snakebites in Arkansas occurred from April through October when 140 (99 per cent) of the 142 bites were inflicted. This striking seasonal distribution of bites coincides with the time that snakes are most abundant and active and with the time that people have greater exposure due to out-of-doors occupations and recreation. Similar "seasonal epidemics" of venomous snakebites have been observed in New England, and Florida.[3,4]

The time of day when most snakebite accidents happened was the six hour period from 3:00-8:59 P.M. when 69 (49 per cent) people were bitten. The number of bites by three hour periods of time were: 6:00-8:59 A.M., 12 bites; 9:00-11:59 A.M., 23 bites; 12:00 noon-2:59 P.M., 18 bites; 3:00-5:59 P.M., 36 bites; 6:00-8:59 P.M., 33 bites; and 9:00-11:59 P.M., 13 bites. There were no bites reported from 12:00 midnight to 5:59 A.M. For seven cases the time of the bite was not recorded.

BITE VICTIMS—There were 74 white males, 53 white females, 8 non-white males and 7 non-white females admitted to Arkansas hospitals for snakebite treatment during 1958 and 1959. All of the non-whites were Negroes. Using the 1960 census of the population of Arkansas, the bite rates per 100,000 population were: 10.71 for white males, 4.25 for non-white males, 7.52 for white females and 3.46 for non-white females. Thus, whites had higher snakebite rates than non-whites and males had higher rates than females.

The age distribution of Arkansas bite victims is shown in Table 2. The largest number of bites happened to children and youths 10-19 years of age (41 bites) and those 0-9 years of age (32 bites). Indeed 51 per cent of all snakebites were inflicted on children and young adults less than 20 years of age. Age-specific bite rates are much more meaningful since they take into account the population at risk in a particular age group. The highest biannual bite rate per 100,000 population was for those 10-19 years of age (12.12). The lowest bite rate was found among people 60-69 years of age.

An analysis of the occupations of the patients showed that 66 were children, 24 were housewives, 16 were farmers or farm laborers, 14 were laborers

other than farm laborers, six were craftsmen, and two were clerical workers. One each was a manager, a private household worker and a service worker. The occupation was not coded for the remaining bite victims.

ACTIVITY AND PLACE—Twenty-two people were bitten while working or walking in their own yards. An additional 18 bites occurred while children were playing, 12 in their own yards and six elsewhere. Ten people were bitten while engaged in recreation other than hunting and fishing, nine while picking up lumber or logs, seven while working on a farm not near the house, seven while hunting or fishing and five while working around a barn or hen house. Three people discovered that handling a poisonous snake is a good way to get bitten and three people were bitten while walking on or near a highway. The activity was not coded for the remaining patients.

The place where the bite accident happened is closely related to the activity when bitten. The largest number of bites, 34, happened in the patients' own yards. Nineteen people were bitten in the woods, 15 near a lake, river or body of water, seven on a farm not near the house, five near a barn or hen house, four in a field away from the house, four in or under a building or house, three on or near a highway, and two in a field adjacent to the house. The place where the bite took place was not coded for the remaining patients.

SITE AND SEVERITY—The anatomical sites on human beings where poisonous snakes inflicted their bites are shown in Table 3. Ninety-seven per cent of the bites were inflicted on the extremities—23 per cent on the upper extremities and 74 per cent on the lower extremities. The fingers and hands were the parts most often bitten on the upper extremities. The feet and lower legs, including the ankles, were the parts most frequently bitten on the lower extremities. One 12 year old Negro child was bitten on the right buttock while squatting in the yard. The site was not recorded for three patients.

A modification of the clinical classification of pit viper venenation by Wood, Hoback and Green[5] was used to determine the severity of bites. Bites were classified as follows:

Grade 0—*No venenation.* Fang or tooth marks, minimal pain, less than 1 inch of surrounding edema and erythema. No systemic involvement.

Grade I—*Minimal venenation.* Fang or tooth marks, severe pain, 1-5 inches of surrounding edema and erythema in first 12 hours after bite. No systemic involvement usually present.

Grade II—*Moderate venenation.* Fang or tooth marks, severe pain, 6-12 inches of surrounding edema and erythema in first 12 hours after bite, systemic involvement may be present—nausea, vomiting, giddiness, shock or neurotoxic symptoms.

Grade III—*Severe venenation.* Fang or tooth marks, severe pain, more than 12 inches of surrounding edema and erythema in first 12 hours after bite, systemic involvement usually present as in Grade II.

The severity of venenation (venom poisoning) was classified as follows for 121 hospitalized cases: 27 (22 per cent) were Grade 0; 50 (41 per cent) were Grade I; 33 (27 per cent) were Grade II; and 11 (9 per cent) were Grade III. For the remaining 21 hospitalized cases the severity of venenation was not stated. There was one death among the 142 hospitalized cases reported in this series, providing a case-fatality rate of 0.7 per cent. When one realizes, however, that about 50 per cent of all poisonous snakebite cases in Arkansas are treated on an out-patient basis, the true case-fatality rate is much less than one-half of one per cent. This is confirmed by the fact that there were only three snakebite deaths in the State during the ten year period, 1950-1959. The fatality in 1959 involved a 76 year old female who died 10 days after being bitten on the right leg by an unidentified poisonous snake. Cellulitis and uremia were secondary complications of this snakebite. In 1950, a 44 year old white farmer died 14 hours after a rattlesnake bit him on the right knee. In 1951, a 41 year old Negro female was bitten by a rattlesnake while working in a cotton field. She died six hours later. Contrary to popular belief, few patients die within the first few hours following a poisonous snakebite. About 70 per cent of them die from 6-48 hours after venenation takes place.[6] Two of the three deaths reported here were caused by rattlesnakes. Rattlesnakes caused more deaths than any other poisonous snakes in the United States.[6]

Treatment

The current treatment of North American pit viper (rattlesnake, cottonmouth moccasin and copperhead) bites includes both minor surgery and

medical forms of treatment. A constricting band (tourniquet) should be applied lightly to the involved extremity several inches proximal to the bite. The constricting band should be applied only tight enough to occlude the superficial venous and lymphatic flow. *It should not occlude the arterial circulation* and it should be released every 10-15 minutes for a minute or two. As edema resulting from venom poisoning spreads, the constricting band should be advanced to keep just ahead of the swelling. The purpose of the constricting band is to impede the spread of venom until incision and suction can be used to remove the venom mechanically and/or until antivenin can be administered to neutralize the venom.

Incision and suction (I.S.) is effective in removing venom from experimental animals up to about 120 minutes after the venom is injected. The sooner it is used, the larger the amount of venom that can be removed. Suction should be used for about one hour. We have found the suction cups supplied in the Cutter and the Becton-Dickinson snakebite first-aid kits effective for removing pit viper venom. Incisions, one-quarter inch long and one-eighth to one-quarter inch deep, are made into the subcutaneous tissues over the fang punctures. A few (3-5) additional incisions may be made in the surrounding edematous tissues. A large number of incisions is not needed. Immobilization aids in limiting the spread of venom. However, if one must decide between immobilization or seeking prompt medical treatment, the latter should be sought.

The "3 A's" (antivenin, antibiotics, and tetanus antitoxin and/or toxoid) are recommended, in addition to I.S., in treating all serious pit viper bites. Antivenin Crotalidae Polyvalent (Wyeth) is effective in neutralizing the venoms of all North American pit vipers. It is not protective against coral snake venom. Since antivenin is manufactured from horse serum, the patient should receive a skin test before antivenin is given. For Grade I venenations antivenin may be administered in the deltoid or gluteus muscles. In Grade II and Grade III venenations, antivenin diluted in 1000cc. of normal saline may be given intravenously.[7] Studies with radioisotopes have shown that antivenin accumulates at the site of the bite more rapidly after intravenous administration than after intramuscular administration.[8] Injection of antivenin into the local bite area is not a particularly effective way to administer antivenin. We have found the following amounts of antivenin useful in treating the various Grades of venenation: Grade 0 (no venenation) requires no antivenin; Grade I (minimal venenation) may require 10cc. (one ampoule) of antivenin; Grade II (moderate venenation) requires 30-40cc. of antivenin; and Grade III (severe venenation) requires 50cc. or more of antivenin.

Since snakes' mouths and venoms may harbor pathogenic organisms, antibiotics and tetanus antitoxin and/or toxoid should be given prophylactically. Gram negative organisms predominate, hence a broad spectrum antibiotic is indicated. Penicillin used by itself is not adequate treatment.

Cortisone and ACTH do not affect the survival rate of animals poisoned with pit viper venom. They probably should not be used during the first few days after venenation, although they may be beneficial later in treating serum sickness resulting from antivenin therapy. Antihistamines are contraindicated as they shorten the survival time of animals poisoned with pit viper venoms. Shock resulting from venom poisoning should be treated with infusions of blood, plasma, saline solution and vasopressor drugs. Meperidine hydrochloride and other analgesics may be given to relieve pain. Recently there have been reports of excessive tissue necrosis and amputations associated with cold therapy such as packing an extremity in ice or using ethyl chloride.[8] In our opinion, cold therapy should not be used in treating pit viper bites.

TABLE 1

Seasonal Distribution of Venomous Snakebites in Arkansas, 1958 and 1959

Month	*No. Bites*	*Month*	*No. Bites*
January	0	July	38
February	0	August	26
March	0	September	23
April	5	October	9
May	16	November	2
June	23	December	0

TABLE 2

Age Distribution of Hospitalized Snakebite Victims in Arkansas, 1958 and 1959

Age Group (Years)	*Population at Risk**	*No. Bites*	*Rate per 100,000***
0 — 9	382,556	32	8.36
10 — 19	338,258	41	12.12
20 — 29	191,499	18	9.40
30 — 39	201,963	18	8.91
40 — 49	211,452	9	4.26
50 — 59	191,791	14	7.30
60 — 69	147,100	5	3.40
70 or more	121,653	5	4.11

*Based on the 1960 Census of the Population of Arkansas.
**These rates are only on hospitalized patients for whom information was available.

TABLE 3
ANATOMICAL SITES OF BITES INFLICTED BY POISONOUS SNAKES IN ARKANSAS, 1958 AND 1959

Anatomical Site of Bite	*Side of Body*		*Total No. of Bites*
	Right	*Left*	
Head, face & neck	0	0	0
Trunk, front	0	0	0
Trunk, back	1	0	1
Upper arm	0	0	0
Forearm	2	3	5
Hand	6	5	11
Fingers	12	5	17
Upper leg	0	1	1
Lower leg & ankle	21	23	44
Foot	32	17	49
Toes	7	4	11
Not stated	—	—	3

Summary

Arkansas has the highest annual incidence of poisonous snakebites of any state west of the Mississippi River. An estimated 307 (152 in-patients and 155 out-patients) people were bitten by snakes annually—an incidence of 17.19 bites per 100,000 people. However, the estimated case-fatality rate was less than one-half of one per cent.

Of 142 in-patients reported in detail by Arkansas hospitals during 1958 and 1959, 51 (36 per cent) were bitten by copperheads, 27 (19 per cent) by rattlesnakes, 17 (12 per cent) by cottonmouth moccasins and 47 (33 per cent) by unidentified poisonous snakes. "Seasonal epidemics" of snakebites occurred with 99 per cent of the bites inflicted from April through October. July was the peak month for bites.

Males had higher bite rates than females and whites had higher rates than non-whites. Fifty-one per cent of the cases were among children and young adults less than 20 years of age. Ninety-seven per cent of the bites were on the extremities —23 per cent on the upper extremities and 74 per cent on the lower extremities. Current snakebite treatment is discussed.

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Innominate Arterial Aneurysms Occurring After Blunt Trauma

H. A. Heggtveit (New York Downstate Medical center, Brooklyn, NY), J. S. Campbell, and G. D. Hooper, *Amer J Clin Path* 42:69 (July) 1964

The clinicopathological features related to innominate arterial aneurysms found in two young men subsequent to nonpenetrating trauma to the chest are described. The injuries included rupture of the trachea and right main bronchus in each instance. The lesions were characterized by incomplete transverse lacerations of the intima and media, with proliferation of myxomatous connective tissue in the defects. The adventitia remained intact. Successful excision of these true aneurysms, and the replacement with synthetic grafts, was accomplished respectively, 4 and 11 months after the accidents.

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Atherosclerosis in the Squirrel Monkey

C. C. Middleton et al (Bowman Gray School of Medicine, Winston-Salem, NC) *Arch Path* 78:16 (July) 1964

Naturally-occurring coronary and aortic atherosclerosis of squirrel monkeys (Saimiri sciureus) was studied in 74 New World monkeys. There were microscopic aortic atherosclerotic lesions in 72 and grossly visible lesions in 47. In 17 of the 58 hearts studied, there was microscopically detectable coronary atherosclerosis. The means for serum lipids were cholesterol 65 mgm and triglyceride 109 mgm%. The mean blood pressure was 130/80 mm Hg. Electrocardiograms revealed no evidence of coronary artery occlusion. Previously studied subhuman primates neither showed such a high incidence of aortic lesions nor a coronary disease of this type.

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Sunlight and Skin*

II. Photosensitivity Disorders

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In a previous paper on sunlight and skin[1] we discussed the physics of sunlight, sources of ultraviolet light, normal responses of the skin to ultraviolet irradiation, and the effects of ultraviolet light on some skin diseases. It is our intention in this paper to delve into the problem of photosensitivity.

Definitions and Classification

For the purpose of this paper *photosensitivity* will be defined as any deviation from the normal response of the skin to light exposure. Two other terms are used frequently in light sensitivity discussions, to qualify the more general term photosensitivity. A *phototoxic reaction* can usually be elicited in all persons properly exposed, has the appearance of an exaggerated sunburn, may occur on the first exposure, is limited to sun exposed areas, and usually leaves residual pigmentation when the reaction has subsided. In contrast, a *photoallergic reaction* occurs in only a small percentage of those properly exposed, may appear as an exaggerated sunburn but more likely will be papular, vesicular, urticarial or eczematous, will not occur on first exposure, may develop on areas not exposed to sunlight, and usually leaves no residual pigmentation. In general, drugs produce the phototoxic reaction while polymorphous light eruption is of the allergic type. The mechanism of many of the photosensitizers has not yet been worked out, so in this review the term photosensitivity reaction will be used almost exclusively and will include both toxic and allergic reactions.

The following classification of photosensitivity disorders is simple and has utility. No attempt is made to separate toxic and allergic reactions.

Drugs
Chemicals
Plants
Porphyrias
Unknown Causes

The above headings are broken down further in the Table, which may serve as a ready reference on the various mediators of photosensitivity.

The number of diseases which manifest light sensitivity is small when compared to the ever-growing list of drugs, chemicals and environmental substances which may convey temporary photosensitivity to the unsuspecting patient, housewife, or naturophile. It is not so great a problem recognizing a photosensitivity reaction as it is detecting the agent or condition which brought the sensitivity about. A quick perusal of the Table offers ample evidence for this statement. We are being exposed more and more in our daily living routines to potential photosensitizing agents; they lurk in the bedroom (perfume), the bathroom (soap), the kitchen (limes), the garden (insecticides), the pool (suntan lotion), and, most importantly, in the doctors' offices (drugs). Some knowledge of the photosensitizing agents is necessary in order to do the detective work required to diagnose and successfully treat the light sensitive patient.

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Drugs

Those medications which have been reported to cause photosensitivity reactions are listed under this heading in the Table. Some are more frequent offenders than others, but all of them, under the proper conditions of dosage, susceptibility and exposure, can sensitize one to light.

Among the listed antibiotics, *demethylchlortetracycline* is the most frequent offender. The clinical picture of the reaction is that of an exaggerated sunburn, sharply limited to light exposed areas (Fig. 1). It is usually dose-dependent. Most reported cases have been in individuals taking at least 600 mg daily, and experimental studies have shown this dependency on high dosages to invoke the reaction.[2] However, we have observed several instances of photosensitization in patients taking as little as 150 mg daily. One particularly interesting facet of demethylchlortetracycline photosensitivity, which is not seen in other drug photosensitivity reactions, is onycholysis (Fig. 2) or separation of the nail plate from its bed. *Tetracycline* and *chlortetracycline* have also been reported to cause photosensitivity, and it is probable that other drugs in the tetracycline family also have this property, but to a lesser degree. *Griseofulvin*, the antifungal antibiotic, also possesses this ability.[3] The clinical picture is also that of an exaggerated sunburn.



Figure 1

Exaggerated sunburn response from Declomycin. Note sharp areas of demarcation at wrist and antecubital regions.

The *sulfonamides* have been known as potent photosensitizers since their introduction in the 1930's. Sulfanilamide was the original drug and soon after its appearance reports were forthcoming on its photosensitizing activity. Since that time many sulfonamides have been developed and are being developed, all of which are photosensitizers, but to different degrees. Some of the newest sulfonamides, not listed in the Table, are quite likely light sensitizing also, but have been on the market too short a time to have made it into the literature. Sulfonamides may produce either the phototoxic exaggerated sunburn response or the delayed papular and urticarial photoallergic reaction. It should also be noted that photosensitization may occur with both systemic and topical administration.

It should not be surprising that the *sulfonamide derivatives* are photosensitizing. It may, however, be surprising to learn which drugs these are. They fall into two classes: 1) the oral antidiabetic agents and 2) the oral diuretics or sulfonylureas.

The first oral antidiabetic drug was *carbutamide (Nodisan)* and before it was taken off the market, because of its toxicity, numerous cases of photosensitivity had been reported. The two preparations in greatest use now are *tolbutamide (Orinase)* and *chlorpropamide (Diabenese)*, both of which may produce an exaggerated sunburn phototoxicity.[4,5] The newest antidiabetic agent, *acetohexamide (Dymelor)* has not yet been reported to photosensitize, but there is every reason to believe that its similar structure will lend it this capacity.

The thiazide diuretics are relatively strong photosensitizers, similar in degree to the sulfonamides. Probably because of their longer usage, *chlorothiazide (Diuril)* and *hydrochlorothiazide (Hydrodiuril)* are the only two drugs in this class so far reported to cause this type of reaction.[6] However, other members of this group, *methyclothiazide (Enduron), triclomethiazide (Naqua), bendroflumethiazide (Naturetin)* and *hydroflumethiazide (Saluron)*, should be strongly sus-

pected. They will, most likely, soon take their rightful place in the literature of side effects. Most of the reported instances of thiazide photosensitization have been papular, edematous and plaque-like eruptions, but we have seen the exaggerated sunburn response, also.

The phenothiazines are another large group of drugs which are potent photosensitizers. In sheer numbers, this group is probably the leading cause of light sensitivity caused by medications. Not only are they used systematically, but some are formulated for topical application *(Phenergan).* The group has wide applicability, being employed variously as tranquillizers *(Thorazine),* antihistamines *(Phenergan),* and antipruritics *(Temaril),* as well as anthelmintics and insecticides. The clinical appearance of the reaction may be exaggerated sunburn or maculo-papular and urticarial, indicating both phototoxic and photoallergic mechanisms. (Fig. 3)

Estrogen substances must also be mentioned in a list of photosensitizing drugs. An interesting phenomenon, which occurred with the introduction of the "antipregnancy pills", was the production of chloasma or mask of pregnancy in women on cyclical therapy with these agents.[7] It has become a frequent side effect in the pseudopregnancy state produced by *Enovid* and similar preparations. The mechanism of this pigmentation is not known but its distribution, seasonal onset and character support the concept of photosensitivity.

Several other drugs and classes of drugs are capable of photosensitization and are listed in the Table under Miscellaneous Drugs. Practically all the *barbiturates* can be included, but must be infrequent offenders when compared to the large amounts prescribed. *Para-aminobenzoic acid,* both topically and systemically, as well as *methylene blue, gold salts, phenylbutazone, diphenhydramine (Benadryl),* and *carbinoxamine d-form (Twiston - RA)* have been reported to cause photosensitivity reactions. A large group of agents, the *furocoumarins (Meloxine),* are utilized in medicine solely for their photosensitizing properties. They are used to promote tanning in persons who normally do not tan, to protect those who have photosensitivity diseases, in vitiligo and in research on skin cancer production and prevention.

The antimetabolite, *5-fluorouracil,* is a potent



Figure 2
Onycholysis or separation of nail plate from Declomycin.



Figure 3
Photodermatitis from phenothiazine compound. Note limitation to sun exposed areas.



Figure 4
Berloque dermatitis from application of Shalimar perfume to popliteal space.

photosensitizing agent. This side effect has been noted in reports on its systemic use as a cancer chemotherapeutic agent,[8] as well as more recently when the drug has been applied topically in the experimental study of its effect on actinic keratoses and skin cancers.[9]

Chemicals

In the past few years antiseptic agents have been added to a multitude of soaps, detergents, cosmetics and proprietary first-aid creams and ointments. We are just now beginning to reap the harvest of photodermatitis sowed by these chemical agents listed in the Table, and from all indications it will be a bumper crop.

As an example of how thoroughly these antiseptic agents have penetrated the market, we can look at the products known to contain the photosensitizer *bithionol*. These include Enden Shampoo, Breck Shampoo, Bio Shampoo, Dome Shampoo, Sebb Shampoo, Velveteen Shampoo, Acne-Dome Cream and Medicated Cleanser, Thylox Medicated Soap, Clearosil Soap, Bio Cleanser and Cream, Acnederm, Allergesic Lotion, Nozane, and Bio Compact and Lotion. Photosensitivity reac-



Figure 5
Berloque dermatitis from lime juice.

tions to bithionol have been rather frequent and probably many of them are missed. Johnson and Johnson's First Aid Cream originally contained bithionol but it was taken out because of its high sensitization rate, both for photosensitization and allergic contact dermatitis.

Bithionol and *hexachlorophene* are very closely related and it should be expected that hexachlorophene also photosensitizes. The two most common sources of contact with this chemical are *Phisohex* and *Dial Soap*. The *salicylanilide compounds* are also photosensitizing antiseptic agents and one of them, *tetrachlorosalicylanilide,* is also found in *Dial*. A new soap recently placed on the market, *Safeguard,* contains a similar chemical, *tribromosalicylanilide* (RD50), already a known photosensitizing agent, and it will no doubt produce its share of reactions.

It is most difficult usually to extract from the manufacturers the composition of their products, where the law does not require it to be on the label. This is very true in the cosmetic field, and there are probably many agents and preparations in this class which are photosensitizers but which have not, as yet, been ferreted out.

The other agents in the chemical list are *coal tar and its derivatives*. Tar has been known for



Figure 6
Vesicles, bullae, scarring and hyperpigmentation seen on exposed areas of patient with porphyria cutanea tarda.



Figure 7
Erythropoietic protoporphyria.

many years to potentiate the effects of sunlight, and this knowledge has led to its use in psoriasis and some other skin diseases. Unexpected photosensitivity reactions to coal tar are therefore not as likely as are reactions to some of its derivatives, such as may be contacted in the petroleum industry. Some of these agents are *benzene, tolnene, xylene, anthacene, acridine* and *phenolic bodies.*

Plants

Many plants are known to induce photosensitivity on contact and these are listed in the Table. This is a most difficult clinical condition to diagnose and substantiate, not only because of the large number of such plants, but also because photo-patch testing techniques are in their infancy and consistently reproducible results are difficult to obtain. In addition, there are probably many other plants that contain photosensitizing substances but which are not known to at this time.

The two principle groups of plants causing this reaction are the Umbelliferae and Rutaceae, the members of which owe their photosensitizing properties to their furocoumarin content. *8-Methoxypsoralen (Methoxylen)* mentioned earlier as a systemic and topical remedy for vitiligo, is derived commercially from *Ammi majus,* a member of the Umbelliferae. Other members of these groups are used as spices and in herbal remedies.

One of the most striking clinical states seen from this group is that of *"berloque dermatitis"* (Fig. 4). When one is familiar with the clinical picture, it is easily recognized. It is seen most often in women who wear *Shalimar* perfume, although certain other perfumes and colognes contain the active agent, *oil of bergamot.* This oil is obtained from the citrus fruit, *bergamot*, and is related to the furocoumarins. The application of the perfume plus exposure to sunlight produces deep pigmentation in bizarre configurations, corresponding to the exact areas of application. The common areas of involvement are the sides of the neck, behind the ears, the anticubital fossae, the popliteal fossae and between the breasts. The reaction is of the phototoxic type, is initially red and inflamed, later becomes deeply pigmented, and the pigment may persist for many months.

More unusual forms of berloque dermatitis may occur, and we have seen several examples of it on the hands from juicing *limes* (Fig. 5). Some



Figure 8
Papulo-vesicular type of polymorphous light eruption.

essential oils, such as oil of *lavender*, are frequently added to cosmetics for scent, and may produce a phototoxic reaction.

Porphyrias

Patients with some forms of porphyria are very light sensitive. *Congenital* or *erythropoietic porphyria*, *porphyria cutanea tarda* and *mixed porphyria* all are associated with photosensitivity and have abnormal amounts of uroporphyrin and coproporphyrin in their urines. *Porphyria cutanea tarda* is characterized by fragility of exposed skin, bullae on the hands and arms, scarring, hyperpigmentation and facial hirsutism (Fig. 6). Exposure of their urine to Wood's light ("black light") will demonstrate the presence of large amounts of uroporphyrin I and III by producing a pink or red fluorescence. These abnormal porphyrins, or a precursor or breakdown product, are probably the photosensitizing agents.

Within the past few years a new form of porphyria has been recognized—*erythropoietic protoporphyria*.[10] The clinical picture has been known for a long time and was previously called hydroa estivale or hydroa vacciniforme depending upon the severity of involvement. This disorder of porphyrin metabolism is usually seen in children during the spring and summer, and is characterized by vesicles, bullae and scarring on exposed surfaces. The principle sites of involvement are on the ears, cheeks and nose (Fig. 7). No abnormal porphyrins are found in the urine, but high concentrations of protoporphyrin are found in the circulating red cells and in feces. The red cells have a characteristic fluorescence under ultraviolet light microscopy, and laboratory procedures are available to determine red cell and fecal protoporphyrin levels.

Photosensitivities of Unknown Cause

The most common manifestation of the photosensitive state seen in everyday practice is the *polymorphous light eruption (PML)*.[11] It is so-called because of the variable and mixed clinical picture it may present. The types of *PML* include persistent erythema, papulo-vesicular, eczematous, plaque-like, and urticarial (solar urticaria) reactions, or a mixture of these. The most frequently seen is the papulo-vesicular type (Fig. 8). PML is seen from spring to fall, is intensely pruritic, and is photoallergic in mechanism of action. Although

Table

DRUGS	CHEMICALS
Antibiotics	Antiseptics
tetracycline (Achromycin)	bithionol (Breck Shampoo)
chlortetracycline (Aureomycin)	hexachlorophene (Dial Soap)
demethylchlortetracycline (Declomycin)	tetrachlorosalicylanilide (Dial Soap)
griseofulvin (Fulvicin)	tribromosalicylanilide (RD-50 Safeguard Soap)
*Sulfonamides	Coal tar and derivatives
sulfanilimide	
sulfadiazine	**PLANTS**
sulfamerazine	
sulfaquanidine	Umbelliferae (related to furocoumarins, used as spices, herbal remedies, vitiligo, etc.)
sulfapyridine	parsnip, fennel, parsley,
sulfacetamide	dill, carrots, celery, Ammi majus
sulfamethazine	coriander, etc.
sulfathiazole	
sulfisoxazole (Gantrisin)	Rutaceae (related to furocoumarins, used in perfumes and flavorings)
sulfamethoxypyridazine (Kynex)	lime bergamot, lime
Sulfonamide derivatives	gas plant and other citrus species
oral antidiabetics—sulfonydureas	Others
carbutamide (Nodisan)	buttercup, mustard, meadowgrass
tolbutamide (Orinase)	bindweed, agrimony, fig,
chlorpropamide (Diabinese)	bergamot oil, citron oil,
diuretics—thiazides	lavender oil, oil of cedar,
chlorothiazide (Diuril)	perfumes, cologne water,
hydrochlorothiazide (Hydrodiuril)	St. John's wort, buckwheat, etc.
Phenothiazines	
*chlorpromazine (Thorazine)	**PORPHYRIAS**
*prochlorperazine (Compazine)	
mepazine (Pacatol)	Erythropoietic (congenital)
*promazine (Sparine)	Porphyria cutanea tarda
*promethazine (Phenergan)	Mixed
trimeprazine (Temaril)	Erythropoietic protoporphyria
trifluoperazine (Stelazine)	
Hormones	**PHOTOSENSITIVITIES OF UNKNOWN CAUSE**
diethylstilbestrol	
estrone	Polymorphous light eruption
antiovulatory preparations (Enovid)	persistent erythemas
Miscellaneous drugs	vesiculo-papular
*para-aminobenzoic acid (Potaba)	eczematous
*methylene blue	plaque-like
*furocoumarins (Meloxine)	urticarial
*5-fluorouracil	Lymphocytic infiltrate of skin (Jessner)
gold salts	Xeroderma pigmentosum
phenylbutazone (Butazolidine)	Lupus erythematosus.
*diphenhydramine (Benadryl)	
carbinoxamine d-form (Twiston RA)	

Table. List of drugs and other agents and diseases concerned with photosensitivity.
Parentheses enclose representative proprietary names.
Asterisk indicates drug which causes photosensitivity topically as well as systemically.

the initial eruption appears only on light exposed areas, it may later appear on covered areas. Once a tan has been obtained through graded exposures to sunlight, the reaction is less intense and may disappear until the next spring when sun exposure reoccurs. The disorder usually lasts for years.

The mechanism of production of PML has been postulated to be an antigen-antibody reaction, the antigen being a normal constituent of skin made antigenic through some molecular change brought about by the absorption of energy from UVL irradiation. A similar mechanism is probably responsible for the manifestations of *lupus erythematosus.*

Lymphocytic infiltrate of the skin of Jessner is characterized by one or more erythematous, smooth, thickened, slightly elevated, discrete plaques on the skin of the face or neck. Its association with sun exposure etiologically is almost certain but the mechanism of action is unknown. Many believe this entity to be a variant of discoid L.E. Histologically it may be confused with lymphocytic lymphoma.

Xeroderma pigmentosum is a rare, recessively inherited disease characterized by the development in early childhood of actinic kerotoses, de-



Figure 9
14 year old boy with xeroderma pigmentosum, showing multiple basal and squamous cell carcinomas, actinic keratoses and degenerative skin changes, limited to light exposed areas.

generative changes in the skin and very malignant skin cancers in areas exposed to sunlight (Fig. 9). Covered areas are totally spared. The cause of this extreme photosensitivity is not known and life expectancy is usually less than 20 years. Death is by metastatic skin cancer.

A final paper will deal with the degenerative changes of the skin caused by sun exposure, and therapeutic and preventative measures which are available in relation to them and previously discussed disease states.

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Endocardial Fibroelastosis

J. O. Forfar et al (Western General Hosp, Edinburgh, Scotland) *Brit Med J* 2:7 (July 4) 1964

Seventy-two cases of endocardial fibroelastosis (EFE) occurred among 433 cases of congenital heart disease seen in 8585 consecutive postmortem examinations of infants and children up to the age of 12 years. Sixteen cases of EFE were uncomplicated by any other cardiac anomaly, and 56 had associated cardiac lesions. All the patients with EFE died within the first four years of life, 90% within one year, and 33% within one month. The left side of the heart was more frequently involved than the right side. There was a significantly increased association between EFE and certain obstructive lesions and a decreased association with lesions producing intracardiac shunts. Onset of symptoms occurred in the first six weeks of life in 70% of patients. Onset after six months of age was associated with a longer survival time. EFE may be a secondary change exerting a protective effect.

REPRINT ARTICLES

Reprints of Scientific Articles appearing in the Journal should be ordered within ten days after date of publication as the type is thrown in at that time.

ELECTROCARDIOGRAM OF THE MONTH

WHAT IS YOUR INTERPRETATION?

Age: 70 SEX: F BUILD: MEDIUM BLOOD PRESSURE: 110/76

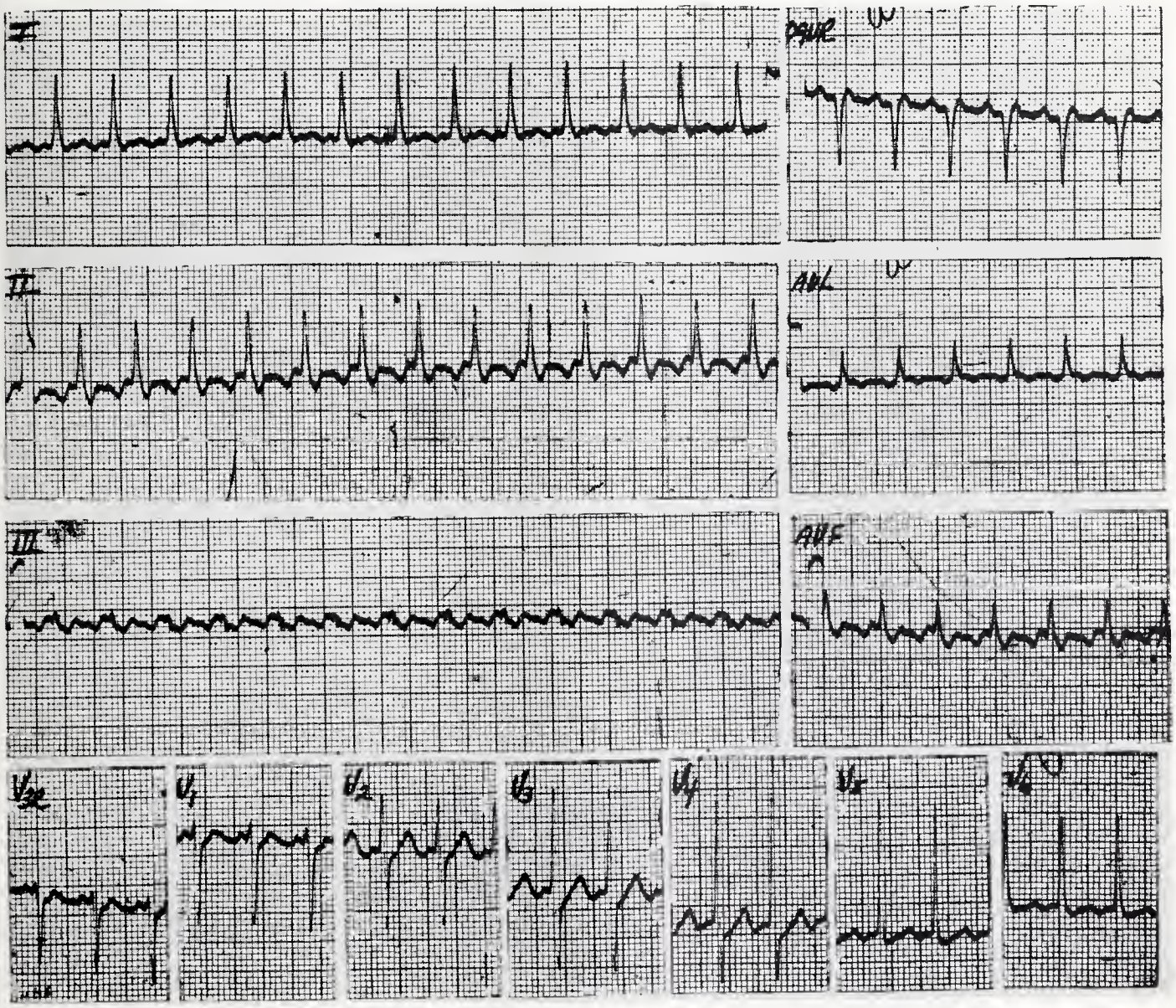
CARDIAC DIAGNOSIS: Arrhythmia

OTHER DIAGNOSES: Anemia

MEDICATION: None

HISTORY: History of previous atrial fibrillation

ANSWER ON PAGE 199



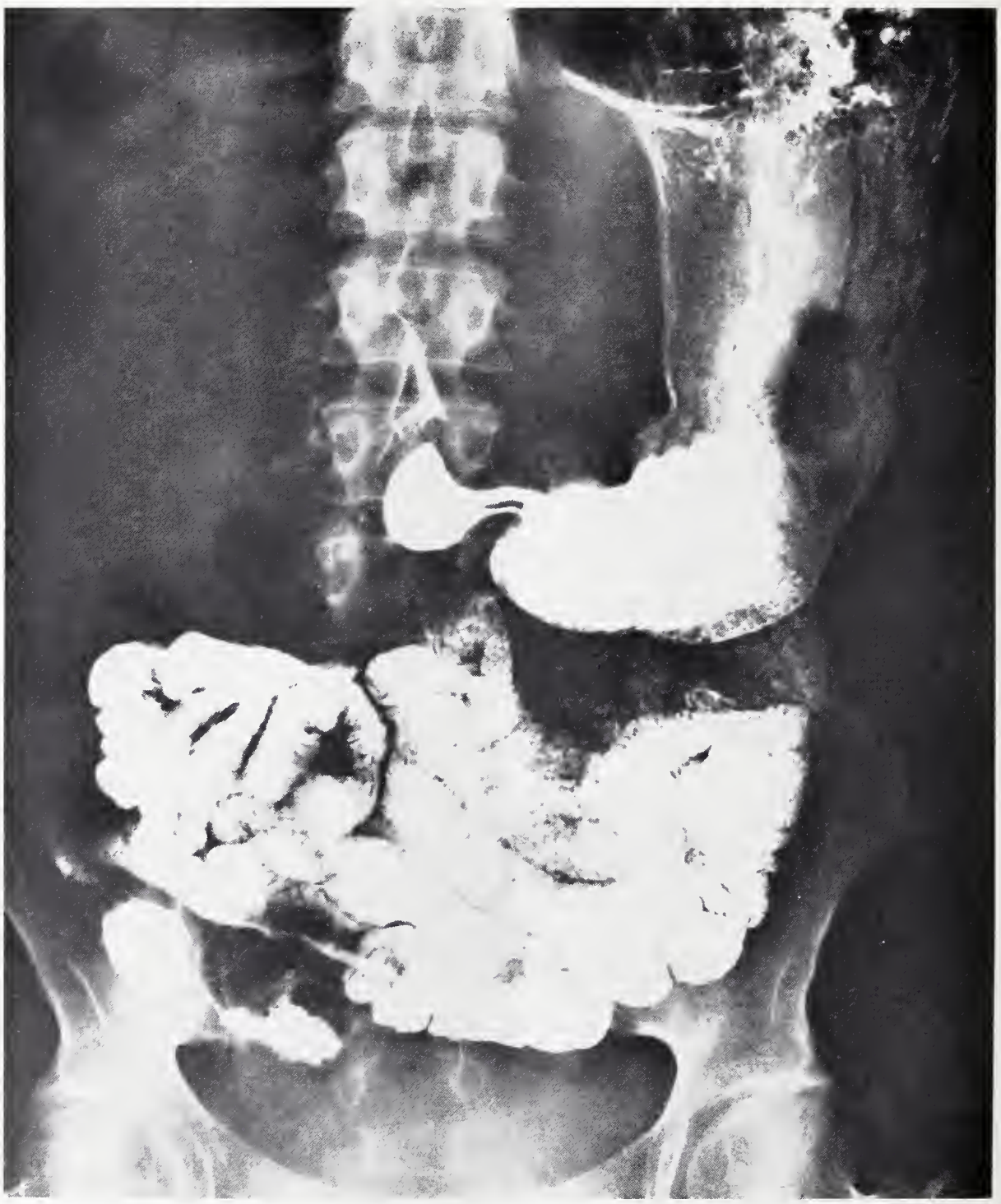
The Department of Medicine, University of Arkansas Medical Center

*James S. Taylor, M.D., Professor of Medicine

WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

ANSWER ON PAGE 199



History: No. 13-84-78 36 year-old female

The patient was admitted with cramping pain in the right lower abdomen of six months duration. A vague mass was palpable in the right lower quadrant of the abdomen.



Shingellosis

This is the third of a series of articles depicting some of the public health aspects of the enteric diseases as they pertain to Arkansas.

The *Shigella* along with the various species of *Salmonella* are the organisms usually found responsible for epidemics of intestinal disease. Although world-wide in distribution, the *Shigella* group of organisms were not isolated until 1898 by Shiga in Japan, 222 years after Leewvenhoc discovered bacteria (1676). Kitasato is credited with encouraging Shiga to search diligently in the stools of patients with dysentery for a microorganism which would be agglutinated by the sera of patients convalescing from the disease. Subsequent work of scientists has revealed that the genus *Shigella* is less complex antigenically than the *Salmonella* and contains fewer species.

Unrecognized and unreported cases are more numerous than the reported incidence, since the variation of degree of symptoms is so great when present at all. When classical symptoms of frequent stools, malaise, fever and cramps progress or are severe at onset there is likely to be blood, mucus, and pus in the stool associated with toxemia. It is well to mention that there is some variation in the symptoms depending on the species involved as well as the number of organisms introduced. The species *S. dysenteriae I* (Shiga) is the most toxigenic of the various species of *Shigella,* according to Topley and Wilson who say *S. flexneri, S. sonnei,* and *S. dispar* require approximately 20 times greater dose of these organisms to prove fatal on intravenous inoculation of rabbits than *S. shiga.* Mortality rates up to 45% are encountered in epidemics of shigellosis. Deaths are most frequent among infants and the elderly debilitated patients or when the Shiga bacillus per se is the etiology, but otherwise the disease is rarely fatal.

Differential diagnosis of clinical dysentery depends on the laboratory's identification of the causative agent whether *Shigella, Salmonella, Endamoeba histolytica, Proteus morganii, Paracolon bacilli, Cholera (Vibrio comma),* or viruses. Although the shigella grow readily on the usual laboratory media at a pH of 6.4 to 7.8 when incubated at 10° to 40° C., they tend to disappear rapidly from stool specimens which are allowed any appreciable lapse of time between collection and planting on the media, particularly if the material has an acid reaction. Therefore, the Arkansas State Board of Health Hygienic Laboratory furnishes feces collection bottles with a buffer solution sufficient to neutralize the metabolic products of Shigella multiplication in a specimen of approximately 0.5 to 1 cc volume. Urine will neutralize the buffer solution and should be avoided in collecting specimens from bedpans, etc. Excess feces will defeat the purpose of the buffer solution and in addition may produce much gas, forming an aerosol effect by which that fecal specimen may contaminate the laboratory technician and adjacent laboratory area or, in some instances, the attempt to remove the lid may "trigger" an explosion of the bottle as a "glass bomb", not unlike bacterial warfare.

In spite of the difficulty to isolate the organism, one should consider the natural history of the organism, such as its recovery from tap water after as long as 6 months. It can live in sea water for 2 to 5 months. It has lived in ice for 2 months. Fresh milk is an ideal culture medium for this organism as well as others. Soiled clothing may harbor living organisms for many days, even when there is *inapparent soiling.* Chlorination of water supplies renders them safe as the pasteurization of milk and milk products makes them safe unless the final product is contaminated after processing. The Shigella are easily killed by sunlight, drying, heat and chemicals.

Shigellosis is unquestionably endemic, and voluminous literature attests to the number of asymp-

tomatic individuals harboring the organisms. Whether their carrier state is temporary or "permanent" (for a year or two, rarely longer) is academic only since immunity is of short duration and it may be only a matter of time before the individual is reinfected with the same or another species of shigella. The repetitious characteristic of the fecal-oral cycle is merely a reflection of the impact of man upon his fellowman.

Because of the poor antigenic reaction, vaccines against shigellosis are not practical even though Shiga's original work was, in fact, dependent upon the existence of antibodies in convalescent serum. The antibodies against one species perhaps give at least some non-specific protection against other species, accounting for the reduction in incidence and severity of the infections among the younger adult population.

Incubation period is one to seven days, usually less than four.

The treatment of choice is the tetracyclines or chloramphenicol.

Preventive measures are essentially a matter of improving personal and community sanitation with special emphasis on sanitary disposal of all human feces and handwashing after use of the toilet. Fly control is included, as is securing an adequate water supply with purification processes as indicated. Prompt reporting and treatment of known cases with practical isolation and concurrent disinfection of feces and soiled articles followed by thorough cleansing for terminal disinfection is routine in good medical practice. After recovery there should be repeated negative stool cultures before food handlers are permitted to return to work.

Table I gives the serotypes of the laboratory confirmed cases of Shigellosis for the years 1961, 1962, and 1963 as reported by the Arkansas State Board of Health Hygienic Laboratory. The epidemiological investigation around cases in 1961 shown in Table II is typical of the findings in families, summer camps, and group residences utilizing common food services; therefore, only one complete year's data depicting epidemiological pattern is included.

TABLE I
ISOLATIONS FROM PERSONS OF SHIGELLA BY SEROTYPE, ARKANSAS, 1961-1963

SEROTYPE	*1961*	*1962*	*1963*
flexneri (not otherwise specified)	5	3	2
flexneri 1	—	—	1
flexneri 1a	2	4	2
flexneri 1b	—	3	3
flexneri 2	8	9	4
flexneri 2a	26	37	49
flexneri 2b	20	24	10
flexneri 3	1	3	—
flexneri 3a	5	7	18
flexneri 3b	—	—	1
flexneri 3c	1	—	1
flexneri 4	8	11	4
flexneri 4a	14	15	25
flexneri 4b	5	1	1
flexneri 6	11	19	7
alkalescens-dispar	1	3	3
boydii 2	—	1	—
boydii-like organism	—	—	1
dysenteriae 1 (Shiga)	—	—	1
dysenteriae II (Schmitzii or ambigua)	—	1	1
E. coli nonmotile related to dysenteriae III	—	—	1
sonnei	15	15	20
undetermined type or unreported type	7	7	2
Total cases confirmed by culture	129	163	157
No laboratory work reported	12	13	15
Total reported cases	141	176	172

TABLE II
SHIGELLOSIS OUTBREAKS, 1961, IN FAMILY OR CLOSELY ASSOCIATED GROUPS

Relationship	*Age*	*Sex*	*Race*	*Serotype*	*County*
	5	F	C	flexneri 6	
Siblings	7 mo.	M	C	flexneri 4b	Pulaski
	7 mo.	F	C	*	
Mother	36	F	C	flexneri 3a	
and	5	M	C	flexneri 3a	Garland
children	11	M	C	flexneri 3a	
	12	M	C	flexneri 3a	
Nursing home					
(employee)	39	F	W	flexneri 2b	
(patient)	68	F	W	flexneri 2b	Pulaski
(employee)	39	F	W	flexneri 2b	
(patient)	88	F	W	flexneri 2b	
	3	M	W	flexneri 2a	
Siblings	3	M	W	#	Phillips
	6 mo.	M	W	#	
Siblings		F	W	flexneri 2a	
	13	M	W	++	
	2				Randolph
Father	33	M	C	flexneri 2b	
and son	8 mo.	M	C	flexneri 2b	Pulaski
Mother	29	F	C	flexneri 4a	
and son	1	M	C	flexneri 4a	Ashley

* Patient had 4 negative stools although she did experience diarrhea.

\# No specimens submitted to State Hygienic Laboratory (reported as clinical cases).

++ Positive in local hospital. Subculture not referred to State Hygienic Laboratory.



EDITORIAL

Response to Exercise in Active Individuals

Alfred Kahn, Jr., M.D.

Athletes have always been convinced that physical conditioning improves their performance. Without conditioning, fatigue sets in after mild exertion, whereas after preparatory training, the same individual can become capable of sustained vigorous activity. Medical investigations have not completely unravelled the difference between the trained and untrained athlete. Increased stamina after training can be proved by ergometer testing.

To study the problem of physical training in greater detail, Cobb and Johnson (The Journal of Clinical Investigation; Volume 42; page 800; June, 1963) studied a control group of fourteen sedentary individuals and ten physically active individuals; the latter group consisted of mountain climbers, a bicyclist, etc. The physical activity consisted of walking the subjects on a treadmill until they were severely fatigued. The sedentary group stopped in fifteen to thirty-six minutes, and the physically active group walked more than one hour without desire to rest.

During and after the exercise, various tests were run to determine the body's reaction to exercise.

The physically active had a greater cardiac stroke index (cc/beat/Square meter of body surface) by 15%. The sedentary group had a faster pulse after exertion. As the pulse rate went up the stroke index decreased in both groups.

Of great interest was the lactate metabolism. In all the subjects, lactate in the arterial bloodstream rose after exercise; in the sedentary group it continued to rise after five minutes, whereas in trained individuals it fell to a plateau where it remained. Pyruvate levels were higher in the sedentary group. Blood glucose levels did not show spectacular differences. Plasma free fatty acids rebounded higher in the recovery phase in the trained group as compared to the sedentary group.

The conclusion Cobb and Johnson drew was that physically well-conditioned men use aerobic pathways to a much greater extent than sedentary individuals when they are subjected to strenuous exercise; sedentary groups relied on anaerobic metabolic pathways; the authors did not feel that this was related to inadequate cardiac output but might be explained on the peripheral distribution of the blood flow. The authors commented specifically on the absence of the "steady state" in this exercise investigation as the heart rate went up progressively and the stroke volume fell in both the active and sedentary groups.

It appears that further investigation is necessary to clearly define the changes that an athlete undergoes after being subjected to a program of physical conditioning.

MEDICINE IN THE NEWS

National Intern Matching Program Results 1953-1964

The text of this datagram will contrast only the results of intern matching in hospitals participating in the National Intern Matching Program (NIMP) that have major medical school affiliations with hospitals that have no medical school affiliations. In 1953, of 6,033 individuals participating in NIMP, 2,643 (43.8 per cent) were matched to hospitals with major affiliations and 2,138 (35.4 per cent) to hospitals without medical school affiliations. In 1964, however, of 7,351 participants, 3,991 (54.3 per cent) were matched to hospitals with major affiliations and 2,150 (29.2 per cent) to hospitals with none. Thus, over an eleven-year period 10 per cent more of the total number of applicants were matched to hospitals with major affiliations and 6.2 per cent less to hospitals without medical school affiliations.

Further evidence of the favorable position of the hospitals with major medical school affiliations is that between 1953 and 1964 the successful filling of intern positions by these hospitals increased from 68.2 to 79.2 per cent. This increase occurred primarily between 1953 and 1958. Since 1958 the percentages have remained essentially constant. During these eleven years the number of hospitals receiving from 50 to 100 per cent of their complement of interns through NIMP rose from 97 to 136. For the same period the number receiving less than 49 per cent dropped from 52 to 26.

In contrast, between 1953 and 1964, the non-affiliated hospitals declined slightly in successful intern matching from 38.5 to 35.6 per cent with an intervening low in 1962 of 30.2 per cent. The number of non-affiliated hospitals receiving from 50 to 100 per cent of their complement of interns decreased from 186 to 139 and the number receiving less than 49 per cent also decreased from 390 to 354. But in 1964 there were 65 fewer non-affiliated hospitals participating in NIMP than in 1962 (a decrease from 558 to 493). It can be assumed that in 1962 these 65 hospitals obtained few, if any, interns through NIMP and that their non-participation in 1964 accounts for the improvement over the 30.2 per cent low of 1962.

Private Hospital to Have Full-Time Director of Medical Education

Dr. G. Max Thorn became the full-time Director of Medical Education at St. Vincent Infirmary, Little Rock, on September 1, 1964. He is responsible for planning and directing the Intern Program in the Infirmary.

Total Borrowing Exceeds $17,000,000 in Medical Education Loan Program

From the beginning of the AMA-ERF Loan Program in March 1962 through June 30, 1964, a total of 15,289 loans had been made, with a combined principal value of $17,309,350. These loans were received by 10,398 individuals, 1,917 of whom were new borrowers in 1964. The total value of these loans, including principal and estimated interest, was $21,509,831. With each $1.00 in the Loan Guarantee Fund securing $12.50 worth of loans, $1,720,786, or 78% of the $2,224,383 in the Guarantee Fund, had been committed.

By June 30, there were 488 borrowers who had completed their medical training and were repaying their loans. An additional 139 had paid their loans in full.

Eight borrowers had defaulted on their loans through June 30, four of them through death. The defaulted loans were purchased by AMA-ERF from the bank, with $11,230 from the Loan Guarantee Fund. After the loans were purchased, borrowers and their estates made repayments to AMA-ERF totaling $1,546 through June 30, leaving a net loss of $9,684 at that date.

The trend of increased borrowing experienced by the Program in 1963, became more pronounced in the first half of 1964.

This is reflected by the average number of loans made each month, as follows:

1962	532
1963	546
1964 (first half)	569

The increase is more significant when comparing the first half of 1964 with the first half of 1963. Last year, there were 2,616 loans through June 30, or a monthly average of 436.

Borrowing was up in all training categories, but residents showed the largest increase:

	1963 (First Half)	*1964 (First Half)*	*% Increase*
Number of Loans to Medical Students	1,686	2,043	20.1
Number of Loans to Interns	352	460	31.5
Number of Loans to Residents	578	911	58.4
Total Number of Loans	2,616	3,414	30.5

Some of the increase in intern and resident borrowing can be attributed to change in training status from year to year, i.e., borrowers who were medical students when they received their first loans in 1962 or 1963 were interns or residents when they borrowed this year. Nevertheless, more than half of the loans to interns and residents in 1964 went to individuals who had not borrowed under the AMA-ERF program previously.

For the first time since the program began, the proportion of loans going to medical students in a six-month period dropped below 60%, and the proportion to residents climbed above 25%:

Training Status	*No. Loans 1st Half 1964*	*% All Loans*	*No Loans Total*	*% All Loans*
Medical Student	2,043	59.8	9,377	61.4
Intern	460	13.2	2,170	13.9
Resident	911	27.0	3,742	24.7
Total	3,414	100.0	15,289	100.0

* * * * *

The Month in Washington

Physician ownership of pharmacies is ethical as long as the patient is not exploited, the American Medical Association told Congress.

Robert B. Throckmorton, AMA general counsel, testified before the Senate Subcommittee on Antitrust and Monopoly that:

"The ownership of a pharmacy by a physician cannot in itself be equated with exploitation. The confidence and trust that the patient reposes in his doctor — to use his knowledge, his skill, his judgment in prescribing medicines, and his understanding of the patient's financial problems—preclude a blanket charge of physician-pharmacy-exploitation.

"It would be a disservice to the public and to the medical profession if from these hearings there issued the unwarranted impression that physicians could not be trusted to own pharmacies or to carry on their professional practices in other more important respects without exploiting their patients. It would be unfortunate . . . if a small incidence of violations and alleged violations came to be accepted as 'proof' of widespread unethical practices."

Throckmorton pointed out that both the AMA House of Delegates and the AMA Judicial Council had ruled that it is not wrong, per se, for a physician to have a financial interest in a pharmacy. However, he added, the AMA House of Delegates last year adopted flat prohibitions against physician ownership in a drug repackaging company or controlling interest in a pharmaceutical company while engaged in the practice of medicine. He said that there were relatively few cases of such ownership.

Throckmorton said that less than two per cent of the nation's 280,000 physicians have any financial interest in drug repackaging companies.

"Most physicians who acquired financial interests in repackaging firms prior to the AMA statement of policy acted in good faith," he said. "Unless they were a part of the tattered fringe of practitioners who intended to exploit their patients, they had no reason to believe that they were engaging in any unethical act. Many of these physicians who still retain their ownership can, at the most, be censored only for 'good faith misbehavior'. However, any continued ownership, beyond a reasonable period of time to permit severance without undue hardship, should call for the institution of prompt disciplinary action within the ranks of medicine."

* * * *

Congressional prospects brightened for legislation exempting community and other non-profit blood banks from the antitrust laws.

The chief counsel of the Senate Antitrust and Monopoly Subcommittee, Bernard Finsterwald, Jr., said he believed Congress eventually would approve this legislation, backed by the AMA.

The bill was introduced by Sen. Edward Long (D., Mo.) after a Federal Trade Commissioner examiner ruled that community blood banks are subject to antitrust laws and charged the Kansas City area community blood bank with restraint of trade by refusing to purchase blood from commercial, profit firms.

Dr. Gunnar Gundersen, chairman of the AMA Blood Bank Committee and a past president of AMA, told the Senate subcommittee that:

"The AMA views with great concern the recent decision of the hearing examiner of the Federal Trade Commission finding that human whole blood is a commodity or article of commerce and as such is subject to 'trade' and 'commerce' within the meaning of those terms as used in the Federal Trade Commission Act. The import of this decision is fraught with many dangers and creates serious problems for the physician. Based upon this decision, the physician's and hospital's freedom of choice in selecting blood is severely restricted, lest they be deemed in restraint of trade.

* * * *

Congress sent to the White House a record $1 billion budget for the National Institutes of Health.

All told, the bill contained $6.5 billion for the HEW Department's activities during the current physical year.

The lawmakers provided $1 million for the long-delayed environmental health center but specified that it be located no closer than 50 miles from the Washington, D. C. area. The Administration sought to have the center located in the Washington suburbs at Beltsville, Md.

Congress approved $222.6 million for the Hill-Burton program of Federal aid for hospital construction, $110.8 million for Federal aid to medical education, and $8 million for tuberculosis control activities.

As the measure finally cleared Congress, the HEW total was $603 million less than the Administration requested, but $942 million more than the House had originally voted.

* * * *

A five-year, $283 million program of federal aid to spur the training of nurses was signed into law by President Johnson.

The measure, supported in principle by the American Medical Association, provides for construction grants for collegiate schools of nursing, for grants to help defray the cost of nurses training, for traineeships for advanced training and student loans.

The new law authorizes $35 million over four years as grants to assist in the construction of new facilities for collegiate schools of nursing, or for the replacement or rehabilitation of existing facilities of that type.

It also provides for $55 million in four years for the construction of new facilities for associate degree or diploma schools of nursing, or for their replacement or rehabilitation.

THINGS TO COME

13th Hahnemann Symposium

The 13th Hahnemann Symposium will be held December 14, 15, and 16, 1964 at the Sheraton Hotel in Philadelphia, Pennsylvania. It will be directed by Donald Berkowitz, M.D., and Edwin Polish, M.D., and the Consulting Director will be Charles M. Thompson, M.D. The main topic will be the stomach including related areas in the esophagus and duodenum.

Space Symposium Plans Announced

Dr. R. B. Robins, Camden, Arkansas, Chairman of the Ark-La-Tex Air Power Council, composed of a group of leading business and professional people in the three state area, announced that the Council has cooperated with the Arkansas Industrial Development Commission in sponsoring an Inventors Congress Aerospace Educational Symposium which was held in Little Rock, October 30, 31, Nov. 1.

Scientific Program at Harrison, Arkansas

The Boone County Hospital medical staff will present a scientific program Friday (November 13, 1964) at the Holiday Inn at Harrison, Arkansas. The scientific program includes a speech by Dr. J. O. Porter, Little Rock, on "Contraception," one by Dr. Van Smith, Harrison, on "Common Sense Management of Hypertension," and one by Dr. Henry Kirby and Dr. G. Allen Robinson, Harrison, on "Multiple Primary Carcinoma."

U of A Alumni Party

The University of Arkansas School of Medicine will have their Alumni Party on Tuesday, November 17th, at 7:00 p.m. at the Summit Club which is No. 8 Third Street, Little Rock, on top of the Sterick Building.

Cardiac Symposium of Arizona Heart Association

The Eighth Annual Cardiac Symposium of the Arizona Heart Association will be held Friday, January 29 and 30, 1965, at the Arizona Biltmore Hotel in Phoenix.

OBITUARY

Dr. Sam J. Allbright

Dr. Allbright of Batesville passed away July 22nd in a Little Rock hospital after a long illness.

Dr. Allbright was graduated from the University of Arkansas School of Medicine in 1913 and did graduate work at Tulane University. He first practiced at Bellefonte (Boone County) and moved to White County in 1916, where he practiced until the time of his illness. He was a past president of the White County Medical Society, the Arkansas Medical Society, and was a member of the Southern Medical Association and American Medical Association. He was a Mason, and an honorary member of the official board of the First Methodist Church in Searcy. He served, also, on the Arkansas State Medical Board.

Dr. Allbright is survived by his widow, Mrs. Olta White Allbright, a daughter and a son.

Dr. J. L. Weathers

Dr. Weathers died at his home in Salem, Arkansas, on August 12th. He had practiced in Salem many years. He was a graduate of the University of Tennessee School of Medicine, a member of the Independence County Medical Society, and an honorary life member of the Arkansas Medical Society and the American Medical Association.

Dr. George L. Hardgrave

Dr. Hardgrave died August 8th at the Clarksville Hospital. A native of Johnson County, Dr. Hardgrave was born near Horsehead Creek on February 5, 1881. Following several years of teaching, he attended the University of Arkansas Medical School. He held every office in the Johnson County Medical Society during his medical career. He was past chief of staff at the local hospital and was a past vice-president of the Arkansas Medical Society. He had practiced up until the time of his death and was Johnson County's oldest practicing physician. Dr. Hardgrave served as State Representative 1935-39, he was a member of the Lions Club, and a Mason. He served on the Board of Deacons of the First Baptist Church for 34 years. Survivors includes his wife, Tela Jones Hardgrave, one son, and three daughters.

ANSWER—Electrocardiogram of the Month

INTERPRETATION:

Rate: A: 320 Rhythm: Atrial Tachycardia,

V: 160 2: 1 block

PR: — QRS: .07 QT: .28

ABNORMAL. Tracing shows atrial tachycardia with 2: 1 block, the ventricular response being regular with a rate of 160 per minute.

COMMENT: The atrial rate in this instance is consistent with the diagnosis of flutter but the return to base line between the abnormal P waves prompts me to use the terminology as stated. Reversion to sinus rhythm was accomplished without incident.

ANSWER—What's Your Diagnosis?

Diagnosis: Regional enteritis

X-Ray Findings: This film was made one hour after barium was given by mouth. The terminal ileum can be seen filled with barium in the right lower quadrant. The lumen is narrowed. All mucosal pattern is lost, and the internal surface is slightly roughened. One area shows the typical "string sign". There is no obstruction or obvious fistula formation in this area.



PERSONAL AND NEWS ITEMS

Mr. J. A. Gilbreath Elected as Member of the American College of Hospital Administrators

In Chicago, Illinois, eight members to the American College of Hospital Administrators' new Board of Governors were elected August 24th, 1964, at the historic first meeting of the society's Council of Regents. Mr. J. A. Gilbreath, administrator of Arkansas Baptist Hospital, was elected to the Board for District No. 6, which includes the states of Arkansas, Louisiana, Oklahoma, Mexico, and Texas.

Dr. R. B. Robins Moving to Chicago

The Ouachita County Medical Society met in regular monthly dinner session Tuesday night, September 8th at Chris' Steak House in Camden. Speaker was Dr. R. B. Robins of Camden who discussed the Democratic National Convention. Dr. Robins, who has served as Secretary of the Ouachita County Medical Society for 37 years, resigned because he is moving to Chicago to enter the practice of medicine and join the university in a teaching capacity.

Doren Hospital Adds Nursing Home Wing

Governor Orval Faubus made the dedicatory address for the new nursing home wing of the Doren Hospital at Smackover in July. The new wing will provide space for ten beds.

Party Honors Dr. Austin Smith

A party to celebrate the Tenth Anniversary of Dr. Austin Smith's medical practice in Huntsville was held in July. The party was given by employees of the county hospital in appreciation of what Dr. Smith has done for the community and the county in the ten years he has been there.

Dr. Ashcraft Enters Practice

Dr. Ted E. Ashcraft has recently entered the practice of general medicine and surgery in Russellville in association with Dr. David M. Williams and Dr. Douglas H. Lowrey.

Dr. Johnson Is Honored

Dr. R. L. Johnson of Blytheville was honored by the University of Tennessee Medical School at commencement exercises in September. He received the "Golden T" certificate and tie pin for services to the community during the half century since his graduation from the medical school.

Dr. Massey Has New Associate

Dr. J. D. Rankin, Jr., entered practice with Dr. L. D. Massey at Osceola in August. Dr. Rankin has lived in Driver since early childhood. He recently completed a tour of duty with the United States Air Force.

Doctor Addresses Club on Disciplining

Dr. Fred Henker, assistant professor of psychiatry at the University of Arkansas Medical School in Little Rock, was the guest speaker at an August meeting of the Parents Without Partners Club in Pine Bluff. His subject was "Disciplining Your Child—How and Why".

Dr. Brown Speaks

Guest speaker at the Little Rock Kiwanis Club on August 2nd was Dr. T. Duel Brown who spoke on modern medical hypnosis. Dr. Brown is past president of the Arkansas Society of Clinical Hypnosis and a fellow of the American Society of Clinical Hypnosis.

New Physician at Trumann

Dr. Jerry Frankum, a native of Blytheville, began a partnership practice in August with Dr. Floyd A. Smith, Jr. at Trumann. Dr. Frankum recently completed a residency in general surgery in Little Rock.

GP Seminar Held

The Arkansas Academy of General Practice held a postgraduate seminar in Pine Bluff on August 6th with Dr. V. Bryan Perry in charge of arrangements. Dr. William Jordan, a neurologist of Little Rock, was one of the speakers discussing subjects pertaining to neurology.



Sebastian County Speakers Bureau

The Woman's Auxiliary to the Sebastian County Medical Society, in cooperation with Dr. Murphey Henry, chairman of the Sebastian County Medical Society's Speakers Bureau, has developed an extensive program to place Medical Society spokesmen on the programs of meetings in that area. The following letter is being sent out to all civic organizations and clubs in the city: "Dear Friends:

Program planning can be difficult. It is with this in mind that we urge you to become acquainted with our Health Education Program and to include some of our medical lectures in your programs for the coming year.

Our speakers are excellent, and you will note from the attached list that they offer a variety of subjects of special interest and concern to lay groups. They are members of the Sebastian County Medical Society.

Arrangements for speakers should be made one or two months in advance. We will do our best to meet any request.

To schedule medical lectures, please contact:

Mrs. Charles H. Floyd
Residence 1231 North 57th Place
GLadsone 2-3985
or
Mrs. Art B. Martin
Residence 2121 Wolfe Lane
SUnset 3-1237

We sincerely hope that we may be of service to you this year.

Very truly yours,
MRS. ART B. MARTIN, *Chairman*
Woman's Auxiliary to the
Sebastian County Medical
Society"

The Auxiliary has listed the specific subjects for talks and has obtained the commitments of individual physicians to speak on subjects listed. The Sebastian County Medical Society hopes to build a progressive Public Relations Program around its Speakers Bureau.



BOOK REVIEWS

GASTROENTEROLOGY, Second Edition, Volume II, by Henry L. Bockus, M.D., Emeritus Professor of Medicine, University of Pennsylvania Graduate School of Medicine, pp 1241, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1964.

This second volume of Bockus' outstanding text continues in the same tradition as the first volume and the previous edition. It is an outstanding reference book on gastroenterology and consists of a discussion of the diseases of the small intestines, colon, peritoneum, mesentery and omentum. This text includes many interesting features that the clinician would do well to consider. For example, there is a discussion of the small intestinal biopsy. Dr. Machella has written a section on intestinal intubation which is of outstanding value. The malabsorption syndromes are well covered by Dr. M. H. Kalser; he has also written a good section on protein-losing gastroenteropathies. This book is crammed full of interesting information written in excellent style. There are excellent illustrations. References are present at the chapter endings. It is heartily recommended.—AK

CURRENT THERAPY 1964, edited by Howard F. Conn, M.D., pp 797, published by W. B. Saunders Company, Philadelphia and London.

This is an excellent compendium on treatment. It is easy to read and it is reasonably complete. This text is highly recommended as a brief synopsis of treatment of most conditions, but it is by no means a complete reference on all the diseases included in this text. It is a worthwhile addition to the library of medical students, interns and practicing physicians.—AK

Antinuclear Antibodies in Families of Patients With Systemic Lupus Erythematosus

V. E. Pollak (1753 W Congress Pkwy, Chicago)
New Eng J Med 271:165 (July 23) 1964

By means of an immunofluorescence technique, antinuclear antibodies were found in 91.5% of sera from patients with systemic lupus erythematosus (SLE), and in 25% of patients with rheumatoid arthritis and other collagen diseases. They were found in only 4% of the 271 patients with diseases other than SLE and the collagen diseases, and in none of the 71 healthy subjects. Antinuclear antibodies were found in relatives of SLE patients in 25 of the 43 families studied. In all, positive tests were found in 33% of the 142 first degree and in 21% of the 47 second degree relatives. These observations strongly suggest that hereditary factors are important in the production of antinuclear antibodies.

TUBERCULOSIS  ABSTRACTS

Sponsored by Arkansas Tuberculosis Association

ABNORMALITIES OF RESPIRATORY FUNCTION IN VARICELLA PNEUMONIA

Alveolar-capillary gas exchange was abnormal in acute varicella pneumonia when measured in adults during or after chickenpox infection. There was no evidence of ventilatory impairment.

While the seriousness of primary varicella pneumonia is recognized, information concerning the physiological alterations of this disease is lacking. Dyspnea, cyanosis, and tachypnea are often present and contrast with the few findings on physical examination of the chest.

The diffuse nodular pulmonary densities and prominent bronchovascular markings seen on X-rays are similar to the changes of sarcoid, miliary tuberculosis, and carcinomatosis. Cyanosis, diffuse nodular pulmonary infiltration, and hyperventilation, in combination, point to impairment in alveolar-capillary gas exchange.

Since there is no precise definition of the functional abnormalities of primary varicella pneumonia, the present study was undertaken to determine the character of the respiratory defect, its extent, and duration.

STUDY COMPOSITION

In the study were 17 adults hospitalized with varicella and 4 persons with histories of chickenpox in adult life. Ten of the 17 patients showed the characteristic X-ray changes of primary varicella pneumonia, while 7 had normal radiographs. Ten patients with other acute diseases but with normal cardiopulmonary examinations served as controls.

Alveolar-capillary gas exchange of the chickenpox patients was assessed at rest and, if possible, at exercise, by measurement of the steady-state carbon monoxide diffusing capacity ($DL_{(CO)}$). Arterial blood was sampled; oxygen saturation, carbon dioxide content, and pH were measured; and carbon dioxide tension calculated. Measurements of ventilatory capacity were obtained as soon as the patients were no longer contagious.

FUNCTIONAL FINDINGS

Nine of the 10 patients with varicella pneumonia complained of cough, and minor hemoptyses occurred in 3. Five patients reported dyspnea but it was severe in only one.

The mean values for the maximum breathing capacity and vital capacity were within normal limits for 9 patients with varicella pneumonia, 4 with histories suggestive of varicella pneumonia, and 4 with varicella without pneumonia. The highest mean maximum breathing capacity (123 per cent) was obtained in the acute varicella pneumonia group. The lowest mean values for both maximum breathing capacity (107 per cent) and vital capacity (96 per cent) occurred in the patients with histories suggestive of acute varicella pneumonia. No evidence of airway obstruction was found in any individual.

All patients with acute varicella pneumonia had impaired carbon monoxide diffusion at rest as well as at exercise. Diffusion studies on the subjects with histories of respiratory embarrassment during chickenpox were also impaired at rest and exercise but to a lesser extent than the acute varicella pneumonia group. The mean resting results for varicella patients without pneumonia were identical to the controls. However, measurements of exercise diffusion in 3 patients with varicella without pneumonia were somewhat reduced.

Arterial oxygen saturation in the varicella pneumonia patients did not differ greatly from the controls. Patients with acute pneumonia showed the greatest degree of hyperventilation as judged by pH and carbon dioxide tension values.

DIFFUSING CAPACITY

In general, resting and exercise diffusing capacity measurements improved with time. In 3 patients resting values returned into the normal range between the first and third months. In the others, normal resting values were not obtained over an observation period of 4 to 13 months. Exercise values reveal more scatter and

Jose S. Bogles, M.D.; N. Joel Ehrenkranz, M.D., and Asher Marks, M.D. *Annals of Internal Medicine*, February, 1964.



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4 patients show an apparent reduction in diffusing capacity at some time during the period studied.

The subjective complaint of dyspnea did not correlate with the results of diffusion measurements. The individual with the least diffusion impairment complained of dyspnea while the patient with the most did not.

A significant diffusion defect in acute varicella pneumonia was demonstrated. Only 3 of 7 patients with acute varicella pneumonia returned to the control range of resting diffusion capacity in the period of observation and in only one did the exercise capacity become normal. Data obtained in patients with histories suggestive of varicella pneumonia indicate impairment may persist for eight years.

Few physiological investigations of viral pneumonias have been reported and the occurrence of abnormalities in gas exchange is not widely appreciated. In a recent study of a variety of viral pneumonias other than varicella, diffusion abnormalities similar to those of the present study were found during the acute phase and in a six-month follow up.

NO VENTILATORY IMPAIRMENT

An increased venous admixture was found in many patients during the acute illness. It decreased during the convalescent period. Data from the present study do not permit quantitative assessment of shuntlike pulmonary blood flow although the arterial oxygen saturation on breathing oxygen for 15 minutes did not rise as high in 8 patients with varicella pneumonia as it did in 4 control subjects.

The question of obstructive ventilatory insufficiency as a cause of respiratory distress may be raised.

Wheezing respirations and prolongation of the expiratory phase in more than 50 per cent of patients with varicella pneumonia have been reported, but airway obstruction was not confirmed. In the present series one patient was found to have expiratory wheezing, but the ventilatory studies in this subject indicate no evidence of an obstructive defect. Thus, little objective evidence exists for ventilatory impairment in acute varicella pneumonia.

Portosystemic Shunts: Five- and Ten-Year Follow-Up of 68 Cases

G. P. Wratten (Walter Reed General Hosp, Washington, DC), E. J. Jahnke, and T. J. Whelan, *Amer J Gastroent* 41:519 (May) 1964

The follow-up study of 68 patients who had been subjected to portosystemic shunts for cirrhosis associated with portal hypertension is presented. There were 50 males and 18 females aged from 15 to 68 years. Portacaval shunt was performed in 60 patients, and splenorenal shunt in 8. Seven patients died within one month of portacaval shunt. Relatively, many patients died during the first five years after surgery (37), but the death rate declined after five years. The majority of patients died of hepatic decompensation, many of these were alcoholics. The number of patients available after five years decreased each year, and there were 16 patients who survived for more than ten years. Fifteen of these patients are living and well, and only one had upper gastrointestinal hemorrhage.

Zollinger-Ellison Syndrome Treated Without Gastric Surgery

A. M. Clarke, A. I. M. Glen, and Sir Charles Illingworth (Department of Surgery, Medical School, Dunedin, New Zealand) *Lancet* 1:1360 (June 20) 1964

A 34-year-old woman gave a six-year history of dyspepsia of increasing severity—including perforation of a duodenal ulcer and four episodes of hematemesis. Preoperative resting gastric acid was only one-third of the maximal acid output (MAO) after augmented histamine stimulation, yet at operation a non-beta cell islet tumor of the pancreas was found. Removal of the tumor which contained large quantities of gastrin-like substance cured her symptoms. Pre- and postoperative medical vagotomies were performed and the results are discussed. Postoperative resting secretion is low, but MAO (reflecting parietal cell mass) remains unchanged. The tumor demonstrated invasive properties histologically.

December, 1964

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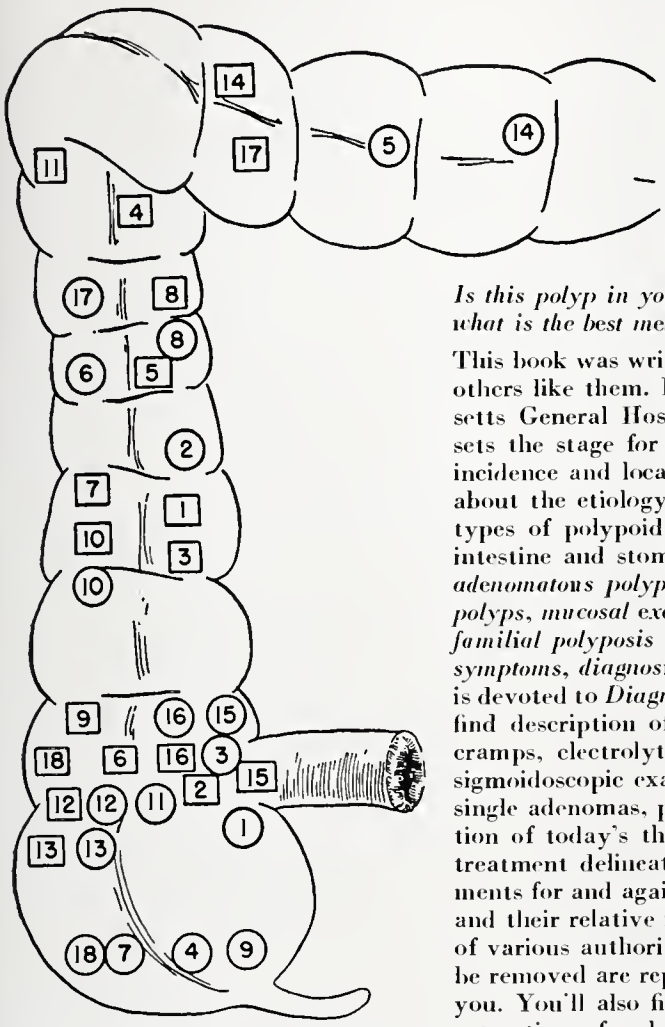


Figure 3-25. *Location of cancer and simple adenomas in resected cancers of the right colon. Squares locate cancers; circles, adenomas.*

Polypoid Lesions of the Gastrointestinal Tract

by Claude E. Welch, M.D.

Is this polyp in your patient benign or malignant? Should it be removed? If so, what is the best method for this particular lesion in this particular patient?

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Medical Disease of the Kidney in Children: Diagnosis and Treatment

Warren F. Dodge, M.D.* and Luther B. Travis, M.D.*

Introduction

During infancy and childhood, renal disease usually comes to the attention of the physician under one of the following circumstances. In infants, the presence of renal disease frequently and significantly interferes with the normal rate of growth. That the infant is "failing to thrive" soon becomes apparent to the parents and is cause for concern. In such an infant, one should consider renal disease early in the differential diagnosis. In the older child the presence of chronic disease is not usually so evident to the parents. The rate of growth at this age is normally much slower, so that interference with growth by renal insufficiency is not so striking. In this group of children, other findings should suggest the presence of chronic renal disease. These include anemia, hypertension, persistent proteinuria and/or hematuria (usually microscopic), or an abdominal mass. Finally, there are those children, usually three to eight years of age, in whom presence of renal disease is presumed by the parents at the time they seek medical advice. These children have gross hematuria or massive edema, either acute or recurrent.

Interference With Normal Growth

One of the most perplexing problems presented to the physician who cares for children is the infant who has "failed to thrive". From the myriad of diagnostic possibilities, this discussion will be concerned with diseases affecting the urinary system and will, in addition, be limited to conditions in which renal tubular dysfunction is operative (9, 11, 16). In some, growth failure can be ascribed directly to the disturbance in tubular function, and therapy directed to the renal defect may lead to improvement in rate of growth. In other syndromes, no evident connection can be found between the tubular defect and dwarfism. In the latter, demonstration of the renal abnormality is useful chiefly as an aid in diagnosis of the underlying defect. The laboratory findings are usually characteristic, so that confirmation of the diagnosis is not difficult once the disease has been suspected.

As concerns etiology, one of several mechanisms may be operative. Many of the syndromes appear to be the result of hereditary defects in a transport system of the proximal tubule. Examples of this type of disorder are nephrogenic diabetes mellitus (glucosuria associated with normal blood sugar) and cystinuria. An anatomic structural defect in the proximal tubule has been noted in some cases with generalized proximal tubular incompetence, the Fanconi syndrome (proteinuria, systemic acidosis with an alkaline urine, glucosuria without hyperglycemia, aminoaciduria, hypokalemia and hypophosphatemic rickets). External toxins, i.e., poisoning with lead, mercury and phenol, may cause tubular dysfunction by means of histologic change or enzyme inhibition. In addition, tubular inhibition may result from an endogenous toxin or inhibitor arising from another associated metabolic disorder (galactosemia, cystinosis and hepato-lenticular degeneration). Other hereditary tubular defects in which the etiology is obscure include renal tubular acidosis (neutral or alkaline urine associated with systemic acidosis), Lowe's syndrome (in which renal tubular acidosis is accompanied by glaucoma and mental retardation), nephrogenic diabetes insipidus and Vitamin-D refractory rickets (hypophosphatemic rickets refractory to correction with normal doses of Vitamin-D).

*From The Division of Renology and Metabolism, The Department of Pediatrics, University of Texas Medical Center, Galveston, Texas.

The tubule is responsible for acidification of urine as well as reabsorption of a large number of substances from the glomerular filtrate. Defective function can lead to their excessive urinary loss. Not only is the renal tubular syndrome identified by the specific substance, or substances, lost in excessive amounts, as noted above, but more importantly, therapy is directed at correction, if possible, or replacement of the loss. The substances which have received the most attention are water, bicarbonate, phosphorus, potassium, glucose, sodium, chloride and amino acids. Treatment includes provision of alkali in renal tubular acidosis and administration of Vitamin-D to patients with hypophosphatemic rickets.

Unsuspected Chronic Renal Disease

Anemia: The most common complication, by far, of long standing renal disease is anemia.[14] Chronic renal disease should, therefore, be considered in the differential diagnosis of anemia, particularly in the older child. Although the anemia is only roughly proportional to the degree of renal impairment, the etiology appears to be directly related to the renal involvement, with associated decrease in circulating erythropoieten levels and subsequent hypoplastic bone marrow. Iron deficiency is generally not present, therefore, the use of iron therapy may theoretically add to the already excessive body load of iron. Tranfusions should be used sparingly, as they will contribute to further depression of the marrow. In addition, the problem of production of multiple antibodies arises with repeated transfusions.

Hypertension: In contradistinction to adults, when hypertension is noted in a child it should be considered to have a definitive etiology[3] and every effort should be made to find the underlying cause. Although this discussion will be limited to renal factors in the etiology of hypertension, it is important to note that extra-renal causes are not infrequent.

Congenital abnormalities causing hypertension include cystic disease of the kidney, mechanical or neurologic obstruction and unilateral vascular involvement. The degree of cystic change varies from that compatible with a normal life span to that in which a mass of cysts replaces the kidney and death from renal insufficiency occurs in the newborn period. No satisfactory treatment of the primary condition is available; however, symptomatic control of the blood pressure may allow the patient to lead a more normal life. Obstructive lesions may, of course, be either unilateral or bilateral. The significance to the patient will depend upon the location and degree of obstruction as well as its duration and consequent damage to the kidney. Infection is common and further contributes to renal parenchymal destruction. The unilateral atrophic kidney associated with hypertension probably has its origin in unrecognized or unsuccessfully treated pyelonephritis in early life. The pathogenesis of the lesion includes local obstructive phenomena with infection, fibrosis, contraction and resulting renal ischemia leading to hypertension. At the time the lesion is recognized the contralateral kidney is usually hypertrophied and the involved kidney virtually nonfunctional. At this point the original infection may be inactive or healed. Removal of the atrophic, nonfunctional kidney usually leads to reduction in blood pressure and improvement in the patient's general health. It is important not to confuse this lesion with unilateral congenital hypoplastic kidney, which is usually asymptomatic. In the latter, it is believed that lack of hypertension results from the blood supply being similarly hypoplastic.

The various hypersensitivity diseases, whether primarily renal or systemic with associated renal involvement, may, at some time in their course, be a cause of hypertension. Miscellaneous renal causes of hypertension include renal tumors (Wilm's), radiation nephritis and Hurler's disease. Finally, there appears to be an increasing number of children, particularly older children, with hypertension in whom no underlying organic cause can be found,[7] i.e., "essential hypertension". Antihypertensive therapy is indicated for these children. Oral reserpine (not exceeding 1.0 mgm per day) alone commonly brings about the desired reduction in blood pressure. If not sufficient by itself, it serves as a useful "base" to which other drugs may be added. It is usually our practice, if additional drugs are required, to next employ hydralazine (not exceeding 200 mgm per day) before turning to the various ganglionic blocking agents.

Abnormal urinalysis: The finding of persistent proteinuria and/or hematuria is usually indicative of chronic renal disease.[4] Although "benign" orthostatic proteinuria likely does exist, one should be cogniscent that the proteinuria of chronic renal disease will decrease in degree in

association with bed rest. Before making the former diagnosis, therefore, one should insist upon absolute freedom from proteinuria in an adequately concentrated urine. Chronic pyelonephritis almost invariably occurs in an already compromised kidney, and should, therefore, be suspected in any patient with chronic renal disease. For this reason quantitative cultures should be performed at the time of the original diagnosis and periodically thereafter. Therapy, otherwise, is purely symptomatic.

Acute Onset or Recurrence of Recognizable Renal Involvement

Hematuria: Classical poststreptococcal acute glomerulonephritis is the most likely diagnosis in a child who has the acute onset of hematuria. There are several recent reviews[6,8,10] of this disease and I will, therefore, proceed to the primary purpose of this portion of the discussion. That is, to call attention to several conditions which may present a clinical picture similar to acute glomerulonephritis, but which differ markedly from the universally good prognosis of acute nephritis.

The acute exacerbation of a pre-existing chronic glomerulonephritis[12] should be strongly suspected from at least two rather characteristic methods of its presentation. These are (a) a latent period of less than six days between onset of preceding infection and occurrence of renal symptoms, and (b) "recurrence" of acute glomerulonephritis. The latter is highly unlikely because of the presence of only a few nephritogenic streptococci and the development of type specific immunity. Prognosis and treatment, of course, are that of the underlying chronic nephritis.

Anaphylactoid purpura (Schonlein-Henoch syndrome) is a generalized hypersensitivity disease, characterized by specific skin lesions, in which renal involvement occurs in 40 to 50% of the cases during the acute attack.[1] The frequent association of joint symptoms and/or gastrointestinal manifestations should suggest the correct diagnosis even in those cases in which the skin lesion has been so mild or fleeting as to have gone un-noticed. Persistence of the urinary abnormalities, i.e., progression to chronic nephritis, occurs, on the average, in one-fourth of the cases. Treatment of the renal involvement during the acute phase is solely symptomatic, as is also true if there is progression to chronic disease.

At least two other conditions may at times mimic acute nephritis. These are the hemolytic uremic syndrome[15] and thrombotic thrombocytopenic purpura.[2] In addition to their nephritic component, each have a thrombocytopenia, hemolytic anemia, (usually Coombs negative) and a reticulocytosis. The former has usually been reported in children under three years of age, while the latter is more common in older children and is more likely to demonstrate purpuric lesions. The prognosis in each is guarded, as the majority of reported cases have had a fatal outcome.

Edema: Anasarca is usually the symptom which brings the child with the nephrotic syndrome to the physician's attention. Although in adults the syndrome often occurs in association with other systemic diseases, the majority of children, conversely, give no history of exposure to toxic agents or evidence of an underlying systemic illness. The finding of evidence of renal insufficiency, i.e., elevation of blood urea nitrogen or presence of hypertension, should alert one to the probability that this child does not have the idiopathic nephrotic syndrome and that, therefore, prognosis is guarded.

We have observed that those children with the idiopathic nephrotic syndrome in whom intensive administration of glucocorticoids was begun with the first four months after clinical recognition tended to have a rapid clearing of proteinuria and remission of all clinical and laboratory evidence of their disease. In addition, those children in whom adequate intensive glucocorticoid therapy was delayed were observed to be less likely to have a successful clearing of proteinuria. Exceptions to the above, however, have been seen. We have observed children in whom adequate therapy begun within the first one to two months after onset has been unsuccessful. Conversely, children with a history of longstanding proteinuria, either untreated or inadequately treated, have been seen in whom clearing of proteinuria and remission of other clinical and laboratory evidence of their disease occurred with adequate steroid therapy.

An explanation for these paradoxical observations seems apparent in the histologic data obtained from the study of renal biopsies from thirty-two children with the idiopathic nephrotic syndrome.[5] Nineteen patients in whom successful clearing of proteinuria and remission of all other clinical and laboratory evidence of their disease occurred in association with glucocorticoid therapy demonstrated, without exception, Ellis

Type II glomerular histology. Seven of the twelve children in whom glucocorticoid therapy was not associated with successful clearing of proteinuria

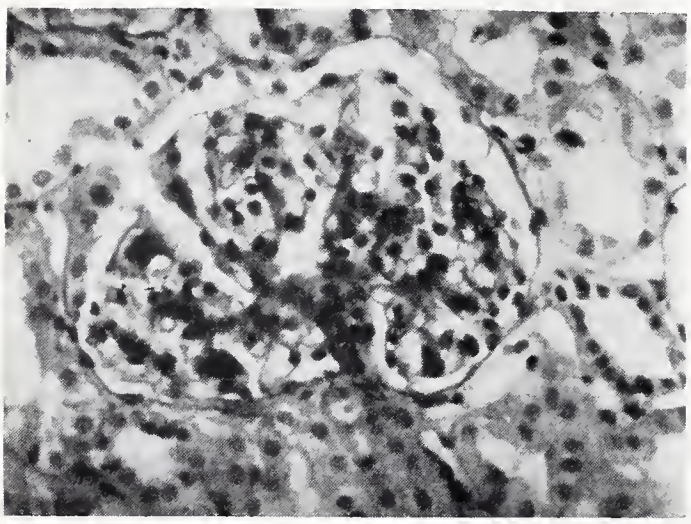


Figure 1. Nephrotic Syndrome, Type I: hyperplasia of glomerular axial stalk with associated cellular proliferation and fibroepithelial adhesion. (H & E stain).

demonstrated Ellis Type I glomerular histology. One additional child, who had received no steroid therapy, also showed a Type I lesion. In each of these latter patients, glomerular tuft and axial stalk hyperplasia and scars (Figure 1) were demonstrated, and crescents and adhesions were seen in all but one. The axial stalk and tuft lesions were active in each, focal in one and focally accentuated in four.

Type II glomerular histology was found in the remaining 25 children. Severity of the Type II lesion appears to be related to the total duration of proteinuria as shown in Table 1. Of the six children in whom normal glomeruli, by light microscopy (Figure 2), were seen, four had a total duration of proteinuria of two months or less (average of one month). Of the twelve children

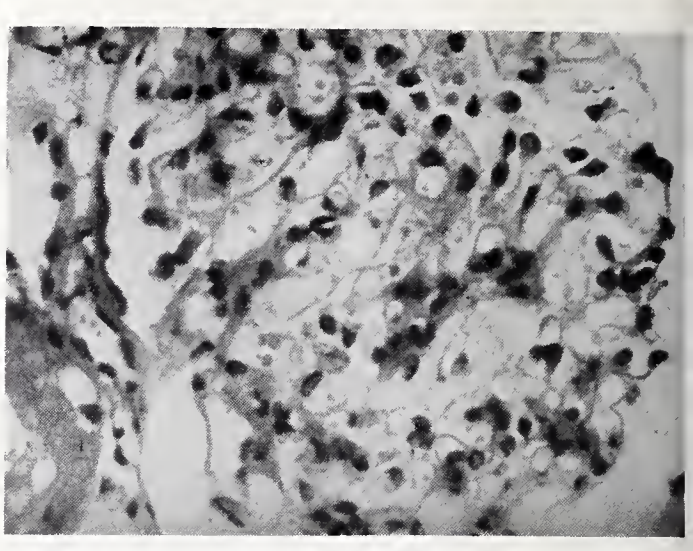


Figure 2. Nephrotic Syndrome, Type II: lacy appearance of normal glomerular capillary structure (i.e., thin wall with only occasional endothelial and epithelial cell nucleus). (H & E stain.)

with mild generalized diffuse basement membrane thickening, seven had had proteinuria for between two and four months (average of three

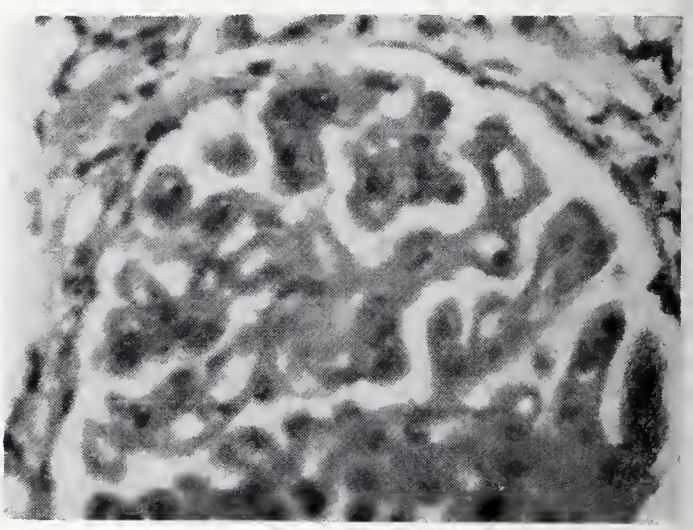


Figure 3. Nephrotic Syndrome, Type II: moderate diffuse thickening of the glomerular capillary basement membrane. (Judged best at the periphery of the tuft). (PAS stain).

Relation of Severity of Glomerular Histopathology (Ellis Type II) to Total Duration of Proteinuria in Twenty-five Children with the Idiopathic Nephrotic Syndrome

Histologic Findings, Ellis Type II	Duration (total) of Proteinuria						
	< 1 mo	1-2 mo	2-4 mo	4-6 mo	6mo-1yr	1-2 yr	> 2 yr
Normal glomerulus (by light microscopy)	3/6	. .	1/6	. .	. .	. .	2/6
Basement membrane thickening							
Mild	. .	4/12	5/12	. .	1/12	. .	2/12
Moderate	. .	. .	. .	1/7	. .	3/7	3/7

Table 1. Relation of Severity of Glomerular Histopathology (Ellis Type II) to Total Duration of Proteinuria in Twenty-five Children with the Idiopathic Nephrotic Syndrome.

Relation of Severity of Glomerular Histopathology (Ellis Type II) to Glucocorticoid Responsiveness in Twenty-five Children with the Idiopathic Nephrotic Syndrome

Histologic Findings, Ellis Type II	Response to Glucocorticoid Therapy	
	Successful	Unsuccessful
Normal glomerulus (by light microscopy)	6/6	. .
Basement membrane thickening		
Mild	10/12	2/12
Moderate	3/7	4/7

Table 2. Relation of Severity of Glomerular Histopathology (Ellis Type II) to Glucocorticoid Responsiveness in Twenty-five Children with the Idiopathic Nephrotic Syndrome.

months). Of the seven children with moderate generalized diffuse basement thickening (Figure 3), six had had proteinuria for longer than one year (average of three and one-half years).

The relationship between severity of the Type II glomerular lesion and responsiveness to glucocorticoid therapy is shown in Table 2. Normal glomeruli (by light microscopy) were found in six children, and in all six there was a successful response to glucocorticoid therapy. Generalized diffuse thickening of the capillary basement membrane was observed in the remaining nineteen children. This was mild in ten and moderate in three of those in whom steroid therapy was successful; while it was mild in two and moderate in four of those in whom glucocorticoid therapy was unsuccessful.

These observations suggest that, to achieve successful clearing of proteinuria and remission of all other clinical and laboratory evidence of the nephrotic syndrome (1) the patient must have an Ellis Type II glomerular lesion, and (2) initial administration of adequate glucocorticoid therapy should begin within the first four months after recognition of the disease. Although there are exceptions to the second, we have encountered no exceptions to the first.

Our regimen of therapy[13] is comparable to that used by the majority of nephrologists across the country. Following a two to three day period of observation during which confirmatory diagnostic investigations are carried out, tuberculin skin testing is performed and the child is observed for evidence of significant infection, intensive* glucocorticoid therapy is begun. The steroids are continued at this dosage until the urine has been free of protein for 24 hours, or for a total of 21 days, whichever is shorter. The average childhood nephrotic receiving adequate steroid therapy within the first four months after onset will usually become free of proteinuria by the 8th to 10th day. At this point the glucocorticoids should be rapidly discontinued**. The rational for rapid tapering of the dose is based on evidence that the process is very likely to become active again if steroids are administered in less than suppressive amounts for longer than five days. Following this, the child is begun on intermittent maintenance*** therapy for at least six to nine months of freedom from proteinuria, at which time therapy is usually discontinued. Intensive therapy should, however, be immediately reinstituted with the first evidence of recurrence of the nephrotic syndrome (i.e., return of proteinuria).

If on the other hand, proteinuria continues to persist as late as the 21st day of intensive therapy, the glucocorticoids are still discontinued in the usual manner and the child placed on intermittent maintenance therapy. It has been our experience that a significant number of children will have clearing of proteinuria within the first three months of maintenance therapy. If not, it is our practice to repeat the intensive steroid therapy again at that point.

Summary

During infancy and childhood, the presence of renal disease may or may not produce findings of such magnitude as to be a cause of concern to the parents. Similarly, the findings may or may not be such as to direct the parents' attention to the urinary system.

In infants, interference with growth is frequently of sufficient severity as to cause early parenteral concern but only infrequently do the signs and symptoms incriminate the urinary system. In many older children, both the severity of the disease and its renal involvement may be unsuspected; while in other children, the nature of the illness, i.e., hematuria and/or edema, may cause the parents to rightly presume renal involvement.

Accurate differentiation should be made between classical acute glomerulonephritis and other conditions which mimic it. Although this differentiation may be only of relative importance as concerns therapy, it is highly desirable as concerns assigning an early and accurate prognosis.

The idiopathic nephrotic syndrome in children has been noted to be associated with two different types of glomerular histopathology, Ellis Type II and Ellis Type I. Adequate glucocorticoid therapy in the former, particularly when instituted during the first four months of disease, is frequently successful in bringing about a total remission. Conversely, in the latter group this is seldom the case.

*Prednisone, 15 mgm/M² every six hours (or its equivalent; i.e., Celestone, 1.8 mgm/M² every six hours).

**Prednisone (or its equivalent), 1.5-2.0 mgm/M² every six hours for one day; then 1.5-2.0 mgm/M² every eight hours for the second day; 1.5-2.0 mgm/M² every 12 hours for the third day; 1.5-2.0 mgm/M² every 24 hours on the fourth day; no steroids on the fifth day; begin maintenance therapy on the sixth day.

***Prednisone (or its equivalent), 15 mgm every eight hours on three consecutive days each week.

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Renal Tubular Acidosis Caused by Degraded Tetracycline

L. C. Wegienka and J. M. Weller (University of Michigan Medical Center, Ann Arbor) *Arch Intern Med* 114:232 (Aug) 1964

Occurrence of the Fanconi Syndrome (familial disease characterized by congenital hypoplasia of the bone marrow combined with various congenital defects) was reported after the ingestion of degraded tetracycline. A patient who developed severe renal tubular acidosis following ingestion of outdated tetracycline was studied. Ammonium chloride loading showed that defective renal tubular hydrogen ion excretion was still present two months after the acute episode. One and one-half years later, this renal tubular function was normal. The renal tubular disorder was similar to that found in the adult type of renal tubular acidosis.

The Doctor's Place in Public Affairs

Address of Walter H. Judd, M. D.[*]

Arkansas Breakfast
June 22, 1964

It is a great honor indeed to speak at the breakfast the Arkansas Medical Society traditionally gives to get the Annual Convention of the American Medical Association off to a good start.

It is always for me a unique personal pleasure to meet with members of the profession in which I spent twenty-six years of my life—as a student and as a physician and general surgeon. During those years, I enjoyed the deep and abiding satisfactions that always come when a person knows he is able to help persons in need. The satisfactions in public office are more fleeting!

Sometimes during that incarnation, a chairman before introducing me to an audience would ask, "What shall I call you? Congressman? Honorable? Doctor? Or what? Usually I replied, "I get called worse things than any of those. Why don't you just call me Doctor. I *earned* that one and I will have it after the others are gone."

Another reason I treasure the invitation is because of the deep respect I have for this, my own profession. Years of scientific disciplines and daily experience with naked human beings—persons as they really are—have given most doctors habits of thought—coolheads; attitudes of mind—warm hearts; capacity to make decisions—courage; and capacity to carry through—still higher courage. These are precisely the qualities the nation needs so desperately in its leaders today—and so seldom finds.

Formerly, almost the sole reason for doctors to attend a convention like this was to learn about new concepts of disease, new drugs, new instruments, new techniques, including new methods of dealing with old problems, that would enable us to practice our profession more skillfully and more successfully.

But medical meetings have changed—because times have changed. The doctor's job is bigger than was realized. The high quality of your professional attainments is beyond question. If there is reason for concern, it is more likely to be with respect to the quality of your citizenship. For that must be of a higher order than we have generally demonstrated in the past or there may not long be a free society in which you will have opportunity to use with success and satisfaction the knowledge and skills you have worked so long and diligently to acquire.

I

Our profession is going through the latest of several transitions in the last century. Originally, the doctor's main concern was with therapeutics. Since he didn't know too much about disease processes, it really amounted to treatment of symptoms.

Then Loeffler discovered the diphtheria bacillus and Koch and tubercle bacillus. Virchow and others began doing autopsies systematically. It was proved that most symptoms were the result of demonstrable pathological processes in various organs. The doctor began to shift his attention from results to causes, from therapeutics to diagnosis, from symptomatology to etiology.

This was the period in which I was trained 40 years ago. It was called the era of therapeutic nihilism. Our professors concentrated so much attention on the disease that we almost forgot the patient.

Then, with better understanding of how most diseases are caused and communicated, a third emphasis naturally developed—preventive medicine. The good doctor had to be an expert not only with the stethoscope and the microscope, but with the immunizing needle.

More recently there has been an increasing recognition of the effects of mind and emotions on physiological processes—and vice versa. The doctors who took care of only physiological and pathological processes were losing too many patients to those who paid attention also to people's emotions, and gave them something to have faith in! Psychosomatic medicine belatedly came into its own. The new Department of Medicine and Religion is the latest evidence of this broadening of our concerns and concepts.

Now we have entered a fifth stage in this gradual metamorphosis—the doctor must give more attention to public affairs, or he will lose his professional freedom. During the depression of the

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1930's, the hot war of the 1940's, the cold war of the 1950's, and the seductions of the 1960's, our Government has steadily expanded its activities until it now reaches into everybody's life and everybody's pocketbook almost every hour of every day. How and under what circumstances you are to practice your profession, what you will be able to earn, how much of what you earn you will be permitted to keep, and what you will be able to do with what you are permitted to keep, all these depend more than ever before on what happens in Washington.

But many decisions in Washington depend on what happens in Cuba, or the Congo, or Korea, or Laos, or Berlin.

What happens in those places depends so largely on what is decided by men in Moscow and Peking.

And decisions in Moscow and Peking depend to a greater degree than we realize, I think, on what we do here in the United States—or what they *think* we will do.

Nobody in medicine needs to be apologetic today about discussing government. For unless we handle our affairs in such ways as to maintain freedom and peace in the world there is no gain in America—medical, social, or otherwise—that will long be worth much to anybody.

Doctors must play a more active role in public affairs than medical people generally have—for at least three reasons:

First, to ensure our future as professional men and women; to safeguard the conditions under which we can use to best advantage our knowledge of disease and our skill in helping the sick.

Second, in order to work toward betterment of environmental conditions that affect adversely our patients. The man who comes with arthritis or an ulcer or hypertension frequently has something else wrong with him too. Perhaps as he has a boy in Vietnam; or his business is in difficulty; or inflation has eaten up more than half of his life's savings; or he is apprehensive about nuclear war or atomic fallout. He knows his country is in trouble. He has legitimate anxieties. If we are really going to help him with *all* of his medical problems, we will have to pay more attention to the impact on him of his world environment, and try to influence that environment in the direction of making it more favorable to his well-being.

Third, we must play a larger role in public affairs in order to ensure our future as human beings. Before any of us are doctors, we are like businessmen or lawyers, citizens of this Republic. Most of us are parents. All of us are taxpayers. All of us are trustees of a great and noble heritage of freedom—trustees of a political and economic order which made it possible for even those of us who came from humblest circumstances to get the expensive education which we could scarcely have dreamed of in most countries of the world. That heritage of freedom is gravely endangered both by skillful assault from without and by apathy within.

What we know as doctors about the practice of the healing arts should and must influence our thinking and our activities as citizens. But our obligations as citizens must also influence our thinking and conduct as doctors.

We talk much about what effect our Government's actions may have upon us. The time has come when we must give more thought to what effect we can and must have on our Government!

II

For instance, doctors, almost to a man, are opposed to socialized medicine—by which term I mean tax-supported and Government-managed medical services. Most other people, I fear, assume that we oppose socialized medicine because we believe it would hurt the *doctors*. They think we are a closed-shop union that wants to have complete control of medical practice in order to promote our own selfish interests. We have failed to show the public that our opposition to socialized medicine is not because it would hurt us, but because it would hurt the *public*.

As a matter of fact, socialized medicine wouldn't hurt most medical people financially. The superior doctor will get ahead under any system. The average medical man would probably be about as well off financially under socialized medicine as under free competition. Furthermore, he wouldn't have to worry. He could get a fairly well-paid, Government-supported job right after internship, and continue in it for the rest of his life, with assurance of fairly regular promotions. The inferior doctor would be better off.

The public has been taught to believe by those who are more active in public affairs than we that socialized medicine would give more and better medical care at less cost. Doctors are sure it would give less and poorer medical care at greater cost. For one thing, you would be so busy

taking care of those who need your care least but demand it anyway "because it is paid for by the Government," that you would not be able to give proper time and care to those who need you most.

We in the healing professions tend to concentrate on improving the quality of medical care; those who don't understand the essentials of good care take high quality for granted and concentrate their attention on trying to get more equitable distribution. They don't realize that a main result of the supposedly better distribution when achieved by government compulsion is deterioration of the quality of the care. It is the patients who will suffer most, not the doctors.

It seems impossible for some in our country to believe that there still are professional people motivated more by concern for those they serve than for themselves. Yet, witness the way doctors have worked to eliminate or reduce the incidence of the diseases which it is their livelihood to treat. The beneficiaries of their spectacular success in eliminating diseases are not the doctors; the beneficiaries are the patients — at the expense of the doctors!

When has any profession ever worked so hard to reduce its own income? And for your reward, you have often suffered scurrilous misrepresentation by some of the very persons whose lives your efforts are prolonging.

So it is not because we are doctors that we oppose government-financed and managed medicine; it is because of what we know as doctors about the practice of medicine — the conditions that are essential if patients are to have first class medical care.

But it is not enough for us to be right. We must tell and sell our reasons to the public far better than we have. We can't do that by just talking to each other at medical meetings. We have to reach the public and the politicians, not to put something over on them, but to help them understand the true situation so that no one else can put something over on them.

III

But doctors must play a still broader role in public affairs. For example, who else can so well understand, and contribute so much to helping other citizens understand, the malignant nature of the Communist process which in less than 50 years has spread its blight over one-third of the world and threatens the remainder, including our own free America? If we fail here, we fail everywhere.

For there *is* on this planet a conspiracy dedicated to our destruction. The thing that makes a cancer bad is not its size or its location; it is the lawless way it grows. In practically all respects, the Communist movement behaves like other malignancies. It has rejected the normal processes of growth, and expands by lawlessly encroaching on tissues that don't belong to it. Sometimes it is by direct invasion of an adjacent organ—or an adjoining country like Korea, Hungary, Tibet, Laos. Or it extends more stealthily by metastases transplants of malignant cells lodging and working within other organs, or within other countries to disrupt their economy, subvert their thinking, weaken their institutions, in preparation for takeover.

To deal successfully with the present malignant threat to our survival, how urgently our country needs the kind of mind which his medical training has given the doctor.

First, the autopsy type of mind. You have been trained to study the mistakes of the past and admit them openly, in order to learn from them. The doctor does autopsies not to cover up, but to correct. In government, the prevailing rule is not to correct, but to cover up. Each of the concessions we have made to the Soviet Union since World War I without firm insistence on substantial concessions in return, not just conciliatory words, has led to losses for freedom. Yet how many people in public affairs today, without your kind of mind, urge our government to keep trusting the same old pattern that has always failed.

We also need in public affairs more men with the biopsy type of mind. When you look through a microscope and see some abnormal cells that have broken through the basement membrane in violation of normal laws of growth, you don't say, "Well, it's cancer all right, but let's wait and see if it spreads." You *know* it will spread unless you find ways to stop it at once and where it is. But during the last 4 decades, how many among our people have said, "Isn't it too bad what Hitler is doing to the Jews, or the Japanese are doing to the Chinese, or the Communists are doing to the Hungarians or Tibetans? But, after all, those places are a long way off. Let's see if we can't persuade the malignant elements to confine their efforts to the areas presently involved, and not spread to us." Could Hitler be malignant to the

Jews and benign toward us? Can Communism be malignant to others, Tibetans, Laotians, Cubans, Hungarians, and benign toward us?

The doctor knows that in dealing with a cancer, there can be no end to the struggle until it or the body prevails. That does not mean that we must drop bombs on it. It does mean that, as a minimum, we have to isolate it by cutting off its blood supply, and the channels by which it transmits its lawless cells to other areas. Likewise, we must prevent the Communist cancer from winning new victories, such as expanded trade or diplomatic recognition would be for Red China, or admission into the United Nations before it qualifies by abandoning its lawless conduct.

While fighting the malignant process, the doctor knows that he must also build up the strength and health of the rest of the organism, the parts not involved—the resistance of the countries and peoples that are still free.

Doctors have been taught that almost the only unforgivable mistake for a physician to make is to underestimate the possible seriousness of a patient's condition. If we overestimate it, we are guilty of nothing but some undue caution. But if we underestimate it, the patient may be dead. The mistake is unforgivable because it is irretrievable.

Likewise, in the world struggle between lawless and law-abiding forces, it would be an unforgivable mistake to fail to understand the cancerous character of the Communist new growth —or to underestimate its strength, its determination, the dangerous inroads which it has already made into the organs of our Nation and the thinking of our people, without their realizing it. We must not make that mistake ourselves and it is our duty as citizens not to let our fellow citizens make it. For it could be fatal.

IV

It is equally essential that we not make the mistake of underestimating the strength of our own philosophy and faith—the basic soundness of the American system and its attraction and appeal to the oppressed millions of the earth.

What the world generally *wants* most from the United States is our wealth, our goods, our tools. But these are not what it *needs* most—for these are all results. What the world needs most from us is the secret that led to those results.

The secret of our wealth is an economic system which provides maximum opportunity and incentive for men to get ahead, to create, to produce, to expand, in order to improve their lives.

That economic system came from a political philosophy—the right of the individual.

That political philosophy in turn came from a religious faith—the belief that there is a Creator, and that every man is endowed by his Creator with certain unalienable rights arising from his importance and worth as a child of God.

We will not succeed in preserving the material results unless we revitalize and strengthen the spiritual roots from which the results came.

In short, we shall have to demonstrate as strong and deep a faith in our faith as the Communists have in theirs—and we shall have to work as hard and as skillfully to spread the truth as they work to spread their falsehoods.

To be successful, we must work both as individuals and as members of groups which we join and support because they are dedicated to the causes in which we believe—religious groups, civic groups, political groups.

So often one finds doctors unwilling, or too preoccupied, to work in political organizations. Yet if we are to expand our influence in public affairs, we must participate in politics, for it is politics that determines government—and government today determines the conditions of our lives as well as of our practice.

Therefore, join the political party of your choice—not because you think it is always right, but because you think it is nearest right on the most important issues. You won't agree with it on everything, any more than you agree on every issue with your church, or your medical society, or even with your wife. You don't pull out of those associations whenever you disagree. Rather, you stay in and try to move them in the direction you believe is better.

Just so, associate yourself with the party with whose principles and programs you find yourself in closest agreement, and work in and through it to help *se*lect, and then to help *e*lect, good men and women to public office at every level of government. It is votes at elections, not letters after elections, that have greatest influence on what a Congress does, because they determine who is in the Congress.

Don't imagine you can do much to change the votes of Congressmen who were elected by those with views opposed to yours. Your job is to elect persons who already hold the same general view

as you, and will work and vote for them.

That is, if you can't change the mind of your Congressman, then work to change your Congressman.

This requires that doctors become willing to be candidates for public office. That's rough, I can testify. But both patriotism and good sense require that *all* citizens, no matter how specialized their training, be willing to sacrifice their careers to go into public life as a public service, just as you were called at one time, and your sons are now being called, to sacrifice their careers to go into the armed forces as a public service.

Only as we do these things — not just discuss them, but *act*—will there be hope. The most wonderful thing about our country, the thing which we must preserve at all costs, is the privilege we have of changing the things we don't like. Thank God our system is such that wherever conditions are bad, or don't meet our standards, we *can* correct them—*if we will work in public affairs.*

The way to begin is with ideas and principles, get persons and parties committed to them, translate them into programs, and put them into practice.

Please don't think I am trying to lecture you today. Rather, I am appealing to you for help. This patient is too sick to be saved without the intelligent and dedicated effort of all alert citizens. It particularly needs the leadership of men and women who have the qualities of mind and heart of the good physician—the cool head, the warm heart, the capacity to decide, and the courage to carry through.

The tests ahead will be harder than those of the past. But who is so well equipped to influence the attitudes and actions of our people as are you—in your dual role as doctors and as citizens? I am confident you will prove as resourceful and effective as citizens as I know you will as doctors. Freedom is worth it.

Collateral Circulation of Cavernous Carotid Artery: Anatomy

D. Parkinson (418 Medical Arts Bldg, Winnipeg, Man) *Canad J Surg* 7:251 (July) 1964

Over 200 fresh autopsy cadavers were injected to demonstrate the collateral circulation of the cavernous carotid arteries. A meningohypophyseal trunk was found constantly departing from the midline posteriorly of the cavernous carotid near the apogee of the first forward bend. It gives off three divisions, the inferior hypophyseal artery, a dorsal meningeal, and a tentorial artery. The first two form an arterial circle around the root of the dorsum by anastomosing directly with their opposite number. The dorsal meningeal anastomoses also with meningeal branches of the vertebral and cervical arteries around the foramen magnum. The tentorial artery anastomoses with its opposite by arborizations along the inferior falx. A few millimeters further on, the artery of the inferior cavernous sinus leaves the carotid to supply the coverings and contents of the inferior cavernous sinus and anastomose directly with the middle meningeal at the foramen spinosum. Three millimeters further McConnell's capsular artery departs medially and anastomoses directly across the floor of the sella with its opposite.

Amyloid Heart Disease

A. Farrokh, T. J. Walsh, and E. Massie (Heart Station, Barnes Hosp, St Louis) *Amer J Cardiol* 13:750 (June) 1964

Cardiac amyloidosis is a disease of obscure etiology that affects older persons. Its only symptom, congestive heart failure, does not respond to treatment and eventually proves fatal. Nonspecific electrocardiographic findings have in the past curtailed antemortem diagnosis, but recent advances in electrocardiography have made possible the discovery of features typical of this disease. Twenty-eight cases are presented, and their clinical, electrocardiographic, and vectorcardiographic findings are reported. These elderly patients with congestive heart failure, without a history of heart disease, all exhibited the following combination of electrocardiographic patterns: left axis deviation of QRS, low QRS voltage in the limb leads, a Q-S configuration and/or small R waves in V_1 to V_3, and a VF with or without atrial fibrillation, and rapid ventricular response. Autopsy results confirmed all diagnoses: the heart was large in 23 cases, and microscopic examination revealed amyloid deposition in myocardium, interstitial tissue and blood vessels.

Loneliness as a Symptom of Psychoneurosis*

Jack L. Rubins, M.D.**

Loneliness is one of those ubiquitous terms which everyone uses and seems to understand, and yet which on analysis may have quite different meanings for each person. It is my thesis here that loneliness is not one feeling; that there are many different forms of it; and many root-feelings included in or underlying this symptom. In spite of it being such a common feeling—for us as psychiatrists meeting it as a symptom in our patients, as well as in our ordinary contact with people—very little has been written about it in the psychoanalytic literature. As Fromm-Reichman has emphasized (1), it is one of the least understood and least satisfactorily conceptualized psychological phenomena we have to deal with. There are probably several reasons for this.

In the first place, by its inherent nature and by the patients attitude toward it, it may be difficult to communicate. Some states of loneliness can be felt emphatically, communicated on an emotional level. But some patients in the grip of intense feelings of loneliness cannot or will not communicate it verbally. This may be due to the fear of the emotionally painful effect of awareness of it; or the hopeless feeling that nothing can be done about it. At times the emotional communication of such an intense feeling may not be possible because the analysts ability to meaningfully sense or empathize is blocked by the anxiety-arousing qualities of the loneliness. Such anxiety-producing effects may be due to the intense and irrational and insatiable demands for closeness placed upon the analyst, demanding fulfillment yet impossible to be fulfilled. Or the patient may be aware of feeling lonely, but because of neurotic pride in their likeableness or friendliness or self-sufficiency, may not be able to admit being lonely as a need for someone else without feeling humiliated.

Another factor is that it is such an exquisitely subjective experience that in our attempts to objectivize it, we may limit or distort the phenomenal experience. This is a case where the mere observation of the experience automatically changes its essential nature.

Another obstacle has been the difficulty in clearly identifying and defining the feeling, in delineating it from other similar feelings. Different people feel it in different ways, in different situations. Some persons may not be aware they are lonely; others may be peripherally aware of some such feeling, but try to exclude or deny it. It may be experienced not primarily as loneliness but as depression or anxiety; and vice-versa, patients may speak of loneliness when they really be experiencing something else—emptiness, dependency needs, etc.

A final difficulty lies in the confusion between forms of the objective states which are often subsumed under the term loneliness—isolation, aloneness, separation, alienation, and whether these are compulsive, voluntary or imposed from without. The subjective personal feeling described by many patients as loneliness is usually an unpleasant or painful experience, with a tinge of need or lack to it. It may vary in quality from actually physically painful to eerie or uncanny to almost bittersweet; and it may merge with other feelings like depression or anxiety, from which it still can be distinguished. It may vary in intensity from slight to extremely poignant, anguishing and overwhelming. It may be fleeting or evanescent, or more-or-less chronic. Some persons are more prone to it than others, depending on their personality traits or the immediate dynamic forces acting within them at the time. It may be relieved easily at times, or may require much more to relieve it at other times. It may build up like an addiction, requiring more and more to quench it. It may come and go without any change in the environment. Often it is related by the person to the absence of some other person, object or surroundings, but need not be so related. In fact the loneliness which is felt when others are present, in crowds or with a loved one, may be particularly painful.

By contrast, *aloneness* or *solitude* is simply the state of being without others around. It does not have the unpleasant subjective feeling attached, and may be voluntary, even sought after with

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enthusiasm, as shown by religious recluses, hermits, even creative artists. It may be imposed from without, as during exile or imprisonment. In such cases different persons may react differently, with conflict or rebellion or compliance or resignation, or with creative activity and transcendence. *Privacy* is a generally conscious wish or need for aloneness and movement toward it. It has even been described as healthy, as a required precondition for growth and integrity of the self. (2)

Isolation as an objective state is similar in indicating few or restricted areas of contact with others. More often it indicates a subjective feeling of emotional separation or barrier—a "sense of" isolation—involving such factors as difficulty in communicating or feelings of indifference, often depending on real or imagined rejection by others. Then again we must distinguish between social isolation and personal isolation. There may be a combination of both, where social factors reinforce the intrapsychic factors, such as illness or other conditions rejected by society which add to the persons rejection of himself like leprosy or even mental illness. Such cases may merge with *withdrawal*, which implies an active, compulsive and usually unconscious process of emotional distance-building, a m o v i n g-away-from, with withdrawing of interest, usually based on conflict or anxieties over emotional involvement with others. It is this condition which I feel has been described and misinterpreted as loneliness in some children and schizophrenics, although it may form the basis upon which loneliness may develop secondarily.

Alienation or estrangement in the objective, situational or interpersonal sense, may refer to a dehumanized, mechanized form of emotional relationship between individuals, or between the individual and society. Emotional distance and separation are included, since the emotional bonds are shallow and spurious. In the subjective, intrapsychic sense, it refers to a feeling of distance from or lack of awareness of ones own deep emotional innards, feelings, desires, goals, etc. It must be understood that although I have tried to define all these feelings neatly, in reality such a fine line cannot be drawn clinically; one may blend with another. Any of these states may be present without the feeling of loneliness.

Classical psychoanalytic theory has not, to my knowledge, referred to or attempted to explain the phenomenon of loneliness. It has been stated that Freud, in his paper on "The Uncanny" and later that he and other writers in papers on Melancholia, took into consideration the symptom of loneliness. However, although such symptoms as separation anxiety, isolation and dread, or depression are discussed, loneliness as such is not mentioned. Two subsequent developments in psychoanalytic thought have contributed to this subject: the emphasis on the importance of interpersonal relationships in emotional development, and the interest in social psychiatry and existentialism. Sullivan (3) and later Thompson (4) were aware of the "exceedingly unpleasant and driving experience" of loneliness, but felt it resulted simply from the frustration of a basic "need for personal intimacy," closely related to the bodily organization of the individual; this included companionship, society and physical contact. Recently, Von Witzleben (5) and Fromm-Reichman (1) distinguished between two forms of loneliness: a primary, essential or real loneliness, which is said to be inherent in the basic infantile condition, the feeling of being alone and helpless in the world; and a secondary form which may result from the loss of a loved object. While these views are helpful in making a distinction between the experience in the child and the adult, they attribute it solely to the persons relation with another person. As we know, however, there are forms which arise not in relation to another, primarily on the basis of intrapsychic pathology. And this basic quasi-biological need does not basically explain the phenomenon; we still must ask why this particular individual feels lonely on this particular situation, not in another.

Horney, using an allied viewpoint, speaks of the lonely child in the context of basic infantile anxiety, the feeling of being helpless and isolated in a potentially hostile world (6) as a result of rejective neurotic parental attitudes. But since this approach refers to the generic child rather than the individual one, it is still difficult to evaluate whether it refers to loneliness as such or some other related symptomatic feeling.

The existentialist and social psychiatric views discuss loneliness as a basic or "normal" condition, related on one hand to his existential freedom and on the other to the desocializing effects of modern-day society. It is thus claimed that Man, by his inherent nature is obliged to exercise his freedom, both from his previous state of

experience and from other individuals; at the same time he needs to be part of society. The conflict which must ensue is the cause for loneliness. In addition, the decline of small "intimacy groups" like family and small business, the stress on impersonality, the increase in social mobility, and other such factors, are said to produce loneliness. Certainly these concepts do add another dimension to the subject, the social one, which would take us beyond the scope of this paper. But they do not help much in understanding the individual, personal symptom, since we know that social isolation is not the same as, or accompanied by the feeling of loneliness (7-10).

If we examine the ways in which people attempt to relieve their loneliness, it is possible to clarify some of the underlying motivating needs. Different individuals react in many different ways, usually compulsively driven. Some strive to make a direct emotional contact with another person, like in marriage or having a child, with a needful clinging to the presence of the other person. Or it may be in a superficial relationship with a different single other person repeatedly, shifting rapidly from one to another, as in sexual promiscuity or even in consulting different physicians apparently for physical symptoms. It may be through participation in group activities as in joining clubs, sports or partying. It may be through spectator activity rather than direct participation, as in all the forms of entertainment watching; and indeed a vast entertainment industry flourishes upon such needs. It may be through constant activity, a need to "do something," which is only indifferently related to the presence of other persons, as travelling or shopping. It may be through the practice of religion, which is only partly related to the presence of others, and partly to the feeling of relatedness to some transcendent influence. It may be through narcotizing activities, such as drinking, narcotics or other drug-taking, even eating. It may be through compulsive reading or writing, as efforts to recapture a familiar experience. It may be through attachment to a non-human object like a toy or pet; or if not in reality, in fantasy, as with the imaginary companions of children.

Psychoanalytic exploration shows that each of these defensive activities is the expression of some more specific underlying emotional attitude to self or toward others. I am referring here to those attitudes and personality traits which, as described by Horney (6) are causally involved in neurotic development. Without going into details, suffice it to say that these begin in the child subjected to a neurotic parental environment. The healthy, spontaneous ways of relating to the parents are constricted into compulsive interpersonal attitudes, each with its corresponding needs, claims on others and values. These might be described as self-effacement, with needs for dependency, compliance and love; expansiveness, with needs for mastery, arrogant-vindictiveness or perfectionism; and resignation, with needs for detachment, freedom. Although one of these orientations may predominate consciously, the others are still present but repressed into the unconscious, from where they exert a dynamic conflict-producing effect. The major orientation is glorified and invested with pride in a so-called idealized image of self; as a result the individual experiences self-contempt or self-hate toward his actual self.

Where the loneliness is experienced in relation to a particular other person, there is often a compulsive need for love which has been neurotically glorified as the ideal, in fact the only possible relationship between persons. This is found in the self-effacing person with a compulsively dependent attitude toward others. Underneath there is usually an emotional state of low self-esteem, with self-deprecating tendencies. This person basically feels unloved and unlovable, and it is this feeling which threatens to come into awareness when the other person leaves. When the self-effacement is more severe, of the morbid-dependent symbiotic type, the loneliness may be expressed as a feeling that he does not "belong" to the other person.

When such a state of low-self-esteem includes some feelings of active self-contempt, and there are at the same time, unconscious narcissistic needs, the attachment to a single other person may not be sufficient. Such a person feels lonely unless they are loved, or more specifically unless they receive evidence of being admired, by numerous other persons. The irrational needs may be focused on any aspect of the self: sexual attributes, beauty or strength, femininity or masculinity, intelligence etc., so that lack of attention to any of these may provoke the feeling of loneliness.

In some patients the loneliness is not related

to a need for love, but rather to the simple presence of another person—or part or symbol—as an object. Such patients have to live through another, to experience themselves vicariously by being one with the other. Their loneliness is the awareness that the outside source is not available. The underlying inner state in this person is a feeling of emptiness, or if to a lesser degree, a paucity of inner emotion.

This same form may be experienced not in relation to one other person, but toward other people in general or group, who are experienced as things-in-the-world. Here the need is more generalized into a form of externalized living, but the same inner dynamic feeling is present. Sometimes, however, a different inner state may exist, not emptiness but an inner meaninglessness, an impairment of identity. The individual then obtains an external context, a meaningful framework within which he can feel some wholeness and integration. The loneliness is then basically a threat of experiencing the cutting-off of this necessary external self-context.

A mild degree of loneliness is often felt by persons in strange places, away from home, which can be alleviated not by the presence of other persons necessarily, but by objects which represent familiar past attachments, the framework which gave meaning to the self. This feeling is sometimes based on a fragility or conflict in the persons identity. Such individuals often show a rather rigid identification with or dependency upon particular aspects, symbols or values in their personal identity. When these are temporarily removed their identity is shaken until a reorganization can occur.

One special form of loneliness is related to physical contact. This person has a need to touch others, to indulge in contact activities, such as sports or sex, in which the emotional interplay can be minimal, absent or repressed. The loneliness comes on when such contact is interfered with. Underlying this need may be found, paradoxically either an emotional deadness or much emotional conflict and anxiety. The emotional contact is avoided because the person is unable to experience closeness or because he must repress the psychic conflict such closeness would call into awareness. Therefore the mechanical, physical contact is substituted for the emotional.

Loneliness as a chronic feeling-state is often seen in persons with a compulsive neurotic attitude of detachment—emotional distance—toward others. Such individuals often feel a strong need for freedom, not only from the rational demands arising from the normal emotional interchange between people, but also from any obligations or regulations. These are felt as coercive restrictions, or limitations. Underneath this predominant attitude is conflict caused by repressed compulsive needs for love and closeness. It is when these unconscious needs are emerging into awareness that the loneliness will be felt.

A final form of loneliness is that felt by the individual in a position of responsibility and decision-making. Moustakas calls this "the loneliness of public life, the loneliness of command" (11). Here there exists an underlying conflict between compulsive needs to be outstanding—a form of narcissistic expansiveness—and equally compulsive repressed needs for dependent closeness.

From an experimential viewpoint, the loneliness experience in general—as exemplified by the few selected examples I have given—seems to consist of two components. Each has a peremptory, driving quality and a directiveness to it, and is related to an inner pole and an external pole. We might consider these as a centrifugal and a centripetal force respectively in relation to the self. One is a feeling of something unpleasant or painful occurring within the self which has the effect of impelling the individual away from this inner experience. And at this inner pole are the various unconscious emotional states mentioned—the conflict, anxiety, compulsive needs, emptiness, identity confusion etc. The other is a feeling of lack or need within the self, producing an attraction toward or call for some other person, object or activity at the outer pole, intended to fill or fulfil the feeling. Both are always present to varying degrees, although one may predominate at any particular time. At any moment, these two forces are in balance in the individuals habitual neurotic, psychotic or normal status quo. It is only when some shift or imbalance is occurring that the loneliness will be felt. Such a change may occur from within, by the partial emergence into awareness of, for instance, some conflicting need. Or it may be precipitated from without by a change in the status of the needed external person or object. An actual change need not even occur; even a symbolic or possible change may be enough to set off the feeling, as in the "holiday

loneliness," felt at the time of traditional get-together holidays, or seeing other persons experiencing closeness. And it is necessary that this be a partial rather than a complete shift or end-state; so that this carries with it always the feeling of eventual completion or reversal. This is why no matter how painful the experience of loneliness, it always has with it a feeling of hope.

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Use of Colon in the Surgical Treatment of Benign Stricture of the Esophagus

P. W. Hong, D. J. Seel, and R. B. Dietrick *Ann Surg* 160:202 (Aug) 1964

Thirty cases of benign stricture of the esophagus were treated with esophago-colo-gastrostomy. Three variations of this procedure were employed: (1) isoperistaltic right colon transplant using mid-colic artery as blood supply; (2) right colon and terminal ileum transplant using mid and right colic arteries as blood supply; and (3) left colon transplant using mid-colic artery as blood supply. Each variation proved successful, but the left colon procedure was associated with a higher incidence of complications due to regurgitation, leakage of anastomosis, and stricture. Thus isoperistaltic right colon procedures with or without the terminal ileum are preferable. Operative mortality was 6.2% and good results were obtained in 89.3% of the patients surviving operation. In stricture patients in whom dilatation is not feasible, esophago-colo-gastrostomy has proved very satisfactory. The patient is provided with an adequate swallowing mechanism, which is important in rehabilitation.

Secretin Tests of Pancreatic and Biliary Tract Disease

F. Goldstein et al (C. W. Wirts, 1025 Walnut St., Philadelphia), *Arch Intern Med* 114:124 (July) 1964

Four hundred and ten patients underwent pancreatic function tests ("secretin tests") after stimulation with secretin alone or with secretin and cholecystokinin-pancreozymin together. No serious side reactions occurred. Statistically, significant differences in bicarbonate concentration of the duodenal aspirates were observed between "control" subjects and patients with chronic pancreatitis and pancreatic carcinoma. Low volumes of secretion were observed in half of the patients with carcinoma. A cytological examination of duodenal aspirates enhanced the value of the test and made possible the unequivocal diagnosis of carcinoma in 12 to 18 patients in whom the diagnosis was later proved histologically. Valuable information regarding gallbladder function was also obtained. The "secretin test" was found safe, reasonably accurate, and deserves wider use.

TEACHING SEMINAR

University of Arkansas Medical Center
Little Rock, Arkansas



Sputum Analysis: A Guide to Therapy In Chronic Bronchitis

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The natural history,[1] pathophysiology,[2] and pathology[3] of chronic bronchitis have been carefully studied during the past few years. On the basis of these findings and their own experience, Ebert and Pierce have recently submitted recommendations for treatment.[4] In that communication, emphasis was placed on examination of sputum as a guide to therapy.

The following case reports serve to illustrate the value of sputum analysis in the management of chronic bronchitis.

Case 1: A 47 year old farmer, developed cough at age 25. The cough became productive of 25-40 ml. of mucoid sputum daily, and this volume of sputum increased and became purulent during the course of frequent chest colds. Wheezing and exertional dyspnea became severe during these episodes. The disease was not seasonal, although the occasional use of "asthma" cigarettes afforded some relief. Otherwise, he denied smoking.

By age 40, exertional dyspnea was constantly present so that he was able to work only part time. During the year prior to admission he experienced dyspnea at rest. He was first admitted to the hospital in January, 1958 because of the rapid development of abdominal and ankle swelling.

On past history, he denied significant pulmonary disease during childhood and gave no family history of chronic pulmonary disease or allergy.

On examination, he appeared chronically and acutely ill with labored respiration. The neck veins were markedly distended. The thorax was not enlarged. Coarse rhonchi and expiratory wheezes were heard throughout the lungs and medium coarse rales were present at both bases. The heart was enlarged and the pulmonic component of the second heart sound was accentuated. The liver was palpable 6 cm below the right costal margin. Ascites and bilateral pedal edema were present. Cyanosis was not apparent and there was no clubbing of the fingers.

Pertinent laboratory studies revealed hemoglobin 13.2 grams% and hematocrit 50%. Chest x-ray showed a slight increase in the peripheral lung markings, moderate enlargement of the pulmonary arteries, and marked cardiomegaly, predominantly of the right ventricle. Bronchography revealed mild cylindrical dilatation of the basilar segmental bronchi of the left lower lobe. There was electrocardiographic evidence of right ventricular hypertrophy.

Treatment consisted of steam nebulization, intermittent positive pressure breathing with isoproterenol in saline, intramuscular aqueous, crystalline penicillin, 600,000 units every six hours, low sodium diet, diuretics, and digitalization.

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The patient promptly improved.

He was not seen again until he was readmitted in July, 1961 because of thrombophlebitis of the left axillary vein, pleuritis, bronchopneumonia, and cardiac decompensation. Pulmonary embolus was suspected and therapy included heparin intravenously.

His third admission in January 1962, was prompted by an exacerbation of bronchitis and cardiac decompensation. Pulmonary function studies were performed (see Table I). The findings included severe obstruction to expiratory air flow, arterial hypoxia and hypercapnia, and a normal total lung capacity. Together with the clinical findings, these results were interpreted as consistent with a diagnosis of chronic bronchitis.

Table I

Date	Arterial Hemoglobin Oxygen Saturation (%)	Arterial Carbon Dioxide Tension (mm Hg)	Arterial pH
January, 1958	84	69	7.28
January, 1962*	89	55	7.33
July 17, 1963	56	58	7.25
July 18, 1963		80	7.28
July 30, 1963	87	33	7.37

*Vital capacity 2.15 L., forced expiratory volume in one second 1.02 L., maximal mid-expiratory flow rate 2.7 L/sec., residual volume 2.71 L., total lung capacity 4.86 L.

On the fourth admission in March 1962, he had increased dyspnea, fluid retention, and jaundice of recent onset. D-pneumoniae was cultured from sputum and blood. There was laboratory evidence suggestive of hepato-cellular damage.

The last three admissions for cardiac decompensation were each associated with pulmonary infection, manifested by copious volumes of purulent sputum.

He was very cyanotic, lethargic, and confused on July 17, 1963, the day of his final admission. He was unable to cough up secretions. Arterial blood gas studies charted in Table I show hypoxia and hypercapnia. A tracheostomy was performed. Shortly afterwards, while receiving oxygen over the tracheostomy tube, he became stuporous. At this time arterial hypercapnia was more marked (see Table I, July 18, 1963). This additional depression of alveolar ventilation was thought to be the result of oxygen administration.

He was given several days of first, controlled, then, assisted, mechanical ventilation, and aqueous penicillin therapy. His clinical status slowly improved, but this was followed by progressively severe jaundice and azotemia. He died following massive hematemesis.

The final clinical diagnoses were chronic bronchitis, cor pulmonale, chronic hepatitis, and gastro-intestinal hemorrhage.

Autopsy revealed cardiac hypertrophy (the right ventricular wall was 10 mm. thick and the left ventricular wall 17 mm. thick) with minimal coronary atherosclerosis. Miscroscopic findings of the liver were consistent with post-necrotic cirrhosis. The lungs were very heavy, together weighing 1,750 grams. Whole lung sections prepared by the Gough technique[5] revealed thickened pleurae, generalized bronchial and peribronchial thickening, and small bullae at both apices. Alveoli adjacent to bronchi were slightly distended, but significant emphysema was not present.

Microscopic examination of the larger bronchi revealed acute and chronic inflammation, marked increase in the number and size of mucous glands, increase in the number of surface goblet cells, and peribronchial fibrosis. Similar inflammatory changes were seen in the terminal bronchioles, where goblet cells, normally absent, were numerous. Distal air spaces were distended in some areas, but the interalveolar septa were preserved. Moderate congestion with numerous hemosiderin containing macrophages were noted in dependent segments of the lung. The pulmonary vessels showed arteriosclerosis and arteriolarsclerosis with marked medial hypertrophy.

COMMENT: The course of this patient's illness included dyspnea, cough and sputum production extending over many years. During the last five years of life, he was hospitalized repeatedly because of severe exacerbations of bronchitis and cor pulmonale. Although the presence of liver disease was suspected during life, it was not confirmed until autopsy. This patient is presented as a classic example of severe chronic bronchitis. At all times, the volume and character of his sputum reflected accurately the clinical status of bronchitis. It is of interest that he did not die of pulmonary insufficiency but of hemorrhage as a complication of hepatic failure.

Case 2: A 66 year old retired building contractor developed productive cough at age 53. This cough subsided after he stopped smoking cigarettes. He had no further respiratory symptoms until two years before admission when productive cough, wheezing, and exertional dyspnea

appeared. Cough was most bothersome at night and sputum production varied widely to as much as one pint per day.

Symptomatic therapy with bronchodilator drugs afforded only slight relief. A brief trial of ACTH produced dramatic improvement but was not continued because a fibrotic density in the right apex was thought to represent inactive tuberculosis.

A three week trial of oral tetracycline therapy (1.0 gram daily) also failed to relieve his symptoms. He gave no history of exposure to drugs or inhaled toxins, and there was no family history of allergy.

Physical examination revealed labored respirations and generalized musical rales on expiration. The heart was of normal size and the pulmonic component of the second heart sound was normal in intensity. The remainder of the physical examination failed to reveal other abnormalities.

Laboratory studies revealed a white blood cell count of 12,300 mm^3, of which 21% were eosinophils. Stool examination was negative for ova and parasites. Chest x-ray showed bilateral apical fibrotic densities, and electrocardiogram was normal. Intermediate tuberculin skin test showed 1.0 cm induration at 48 hours. Histoplasmin and blastomycin skin tests were negative as were the respective fungal serologies. Sputum cultures for mycobacteria, fungi, and bacterial pathogens were negative. Arterial blood pCO_2 was 35 mm Hg and hemoglobin oxygen saturation was 95.5%. Initially, vital capacity (VC) was 2.80 L with one second forced expiratory volume ($FEV_{1.0}$) of 1.34 L or 49% (normal 82%). There was no improvement after bronchodilator drugs.

Sputum volume averaged 30 ml daily and was mucopurulent in character. Small yellow bronchial casts were plentiful and a differential count of Wright's stained sputum smears consistently revealed 20% eosinophilic leukocytes.

After reviewing the clinical findings and performing numerous skin tests, a consultant in allergy concluded that the patient's symptoms were not due to extrinsic allergens. He suggested the diagnosis of intrinsic asthma.

Therapy with isoproterenol nebulization by intermittent positive pressure, heated steam nebulizer, and intramuscular aqueous crystalline penicillin afforded little relief, and subcutaneous injections of aqueous epinephrine HCl (0.2 ml 1:1000) were required at night for relief of dyspnea.

Because of eosinophilia in the sputum and peripheral blood, and the poor response to conventional therapy, corticosteroid therapy was given. Within twenty-four hours (of receiving prednisone 10 mgm every 6 hours orally), he was free of symptoms and the lungs were clear to auscultation. He was also given Isoniazid 300 mgm daily as a precautionary measure because of the evidence of presumably inactive tuberculosis. On the day before discharge VC was 3.35 L and $FEV_{1.0}$ was 3.08 L or 92%. The dose of prednisone was reduced to 15 mgm per day prior to discharge from the hospital and the patient remained asymptomatic. He was referred back to his local physician with the recommendation that steroid therapy be withdrawn gradually.

COMMENT: This patient report illustrates an entity which has been considered a variant of chronic bronchitis. The allergists consider this intrinsic asthma. The internists usually refer to it as eosinophilic bronchitis. We believe the pathogenesis of this condition is closely related to bacterial infection of the bronchi. The importance of sputum examination cannot be overemphasized since the finding of large numbers of eosinophilic leukocytes tends to suggest that improvement with steroid therapy may be dramatic. It is of utmost importance to treat bronchial infection, whenever such patients are given steroid therapy.

DISCUSSION

Chronic bronchitis may develop insidiously with a cough productive of small amounts of mucoid sputum, or it may be precipitated abruptly by an acute respiratory, usually viral, infection. In either case, the pathologic anatomy of chronic bronchitis is hyperplasia of the mucous glands of the tracheobronchial tree. The walls of the bronchi may also be infiltrated with inflammatory cells. The glandular hyperplasia is accompanied by an increased secretion of mucus, the substance which normally protects the bronchial mucosa from irritants and aids the removal of particulate matter. Paradoxically, the hypersecretion of mucus and the hypertrophy of the mucous glands renders the patient more susceptible to bacterial infection. This is due, in part, to impaired ciliary action as the non-ciliated mucous-secreting cells replace ciliated cells on the surface of the bronchi. The susceptibility to in-

fection is almost uniformly manifested by an increased severity of respiratory infections and is sometimes manifested by an increased number of infections.

The occurrence of purulent exudate in the sputum is a familiar manifestation of acute respiratory infections. Acute respiratory infections are self-limited, lasting for only a few days. On the other hand, chronic bronchitis has been clinically defined as an illness characterized by cough with sputum production which amounts to at least two millialiters per day continuously for three months during at least two consecutive winter seasons. While this definition may not be entirely acceptable to all physicians, it serves a useful purpose since it indicates the minimal criteria for the diagnosis.

Patients discount sputum production as an important symptom for a variety of reasons, predominantly aesthetic. A cough is acceptable in society, but sputum is not. The clinical history frequently fails to provide an accurate estimate of the sputum volume, so the collection of twenty-four hour sputum samples on several consecutive days is recommended. When the physician displays an interest in sputum, most patients cooperate by carefully collecting the samples. The volume of sputum is important since it correlates well with the degree of hyperplasia of mucous glands. Patients with chronic bronchitis who produce several ounces of sputum every day have a markedly increased total volume of mucous glands.

The appearance of the sputum is also important. Pure mucoid sputum contains a moderate number of epithelial cells and macrophages, but only a few leukocytes. Muco-purulent or purulent sputum is usually buff to yellowish-white in color. It is convenient in following the course of chronic bronchitis to grade the degree of purulence (from one to four plus). However, the heterogeneity of such sputum makes it difficult to choose any part of the sample as representative. For this reason, homogenization with an enzyme; papain, in buffer solution, is useful.* With the papain method, it is easy to obtain a uniform suspension of sputum suitable for counting in a blood cell counting chamber. Differential cell counts are performed on smears using Wright's stain in the same manner as for peripheral blood smears. The occurrence of bacterial infections correlates well with a total cell count in excess of 5,000 per cubic millimeter, of which ninety percent are polymorphonuclear leukocytes. Gram stain of the sputum smear is also useful in studying patients with chronic bronchitis and permits one to anticipate the type of organism which may be cultured. From this experience, it is suggested that the gross and microscopic examination of the sputum be used as a guide to antimicrobial therapy.

The occurrence of large numbers of eosinophilic leukocytes in the sputum is of interest since it raises the question of hypersensitivity. Sputum eosinophilia has been observed in the presence of bacterial infection. Whether this phenomenon is merely associated with, or results from a reaction to bacteria, to tissue destruction, or to some combination of these factors is speculative at the present time. The presence of significant numbers of eosinophils may be suspected from the bright yellow color of the sputum, however, their presence must be determined from counts of a stained smear. Whether one considers this as a special type of chronic bronchitis (eosinophilic bronchitis), or prefers to term it intrinsic asthma, or even asthmatic bronchitis is of little moment. The important point in recognizing this occurrence is that these patients respond relatively better to steroid therapy than do other patients with chronic bronchitis. Eosinophilic bronchitis accounts for a small percentage of chronic bronchitis in this country. At this hospital it seems to occur in no more than five percent of patients with chronic bronchitis.

The therapy of chronic bronchitis has been reviewed elsewhere, but it should be stated that the most important detail is treatment of bacterial infection. The acute episodes of pulmonary insufficiency coincide with exacerbations of bronchitis. The most common bacterial pathogens at this time are D. pneumoniae, and H. influenzae. Penicillin is the drug of choice, preferably administered intramuscularly in the aqueous crystalline form. The recommended dose is 600,000 units every four to six hours for seven to ten days, followed by procaine penicillin (1.2 million units daily) for at least another ten days. As an alterna-

*To 2 ml. of sputum add 10 ml. of papain solution and shake at room temperature until homogeneous (30 to 60 minutes). Place a drop of the mixture in a Neubauer counting chamber and count all cells in the four large squares.

$$\text{WBC/cu. mm.} = \frac{\text{volume sputum + papain solution}}{\text{volume sputum + volume papain solution}} \times \text{number of cells counted} \times 2{,}5$$

To prepare the papain, 2.4 ml. of papain (2X crystalline—Worthington Biochemical Co., Freehold, New Jersey) is added to a final volume of one liter of a solution containing 1.86 grams of disodium ethylene-diamine-tetra-acetic acid, and 0.878 g of cysteine hydrochloride.

tive, oral tetracycline therapy may be employed. The usual dose is 0.5 grams every six hours for five to seven days followed by 0.25 grams every six hours to complete fifteen to twenty-one days of therapy. Symptomatic treatment with bronchodilator agents, preferably given orally, is determined by the clinical course. A carefully controlled study by Morgan and Rusche[6] has emphasized the futility of steroid administration in most patients with obstructive airway disease (chronic bronchitis and emphysema).

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Diabetic Retinopathy and Rheumatoid Arthritis

E. D. U. Powell and R. A. Field (Massachusetts General Hosp, Boston) *Lancet* 2:17 (July 4) 1964

Thirty-four patients with both rheumatoid arthritis and diabetes mellitus were examined for evidence of retinopathy. The average duration of diabetes was 11.1 years, and of rheumatoid arthritis, 12.2 years. Of 18 patients who had been diabetic for less than 10 years, two had retinopathy evidenced by a few microaneurysms in each case. Of six patients who had been diabetic for 11 to 15 years, one had two small hemorrhages and exudate. Of nine patients with diabetes for over 15 years, only one had retinopathy and a few, streak hemorrhages in one eye. The difference in incidence in this population is significantly different from that in the general diabetic population. The findings are discussed in relation to both disease states and to the possible role of salicylates.

Relationship Between Displacement and Pressure in Closed-Chest Cardiac Compression

S. H. Johansen and H. Ruben (Finsen Institute, Copenhagen, Denmark) *Lancet* 1:1130 (May 23) 1964

Using an experimental apparatus, it was found in eight anesthetized and curarized patients that sternal displacement varied between 0.8 and 2.0 mm/kg pressure exerted on the lower third of the sternum. Varying the area of pressure application between 15 sq cm and 150 sq cm did not change the relationship in five of the subjects (age: 16, 43, 68, 76, 89 years), while the remaining three subjects (age: 15, 18, and 23 years), displayed a 50% to 100% greater displacement with the smallest area. It is pointed out, that the anterior posterior diameter as well as the elasticity of the chest varies considerably from one patient to another, and that these factors are of importance for closed-chest cardiac compression.

ELECTROCARDIOGRAM OF THE MONTH

WHAT IS YOUR INTERPRETATION ?

AGE: 20 SEX: M BUILD: SLENDER BLOOD PRESSURE: not recorded

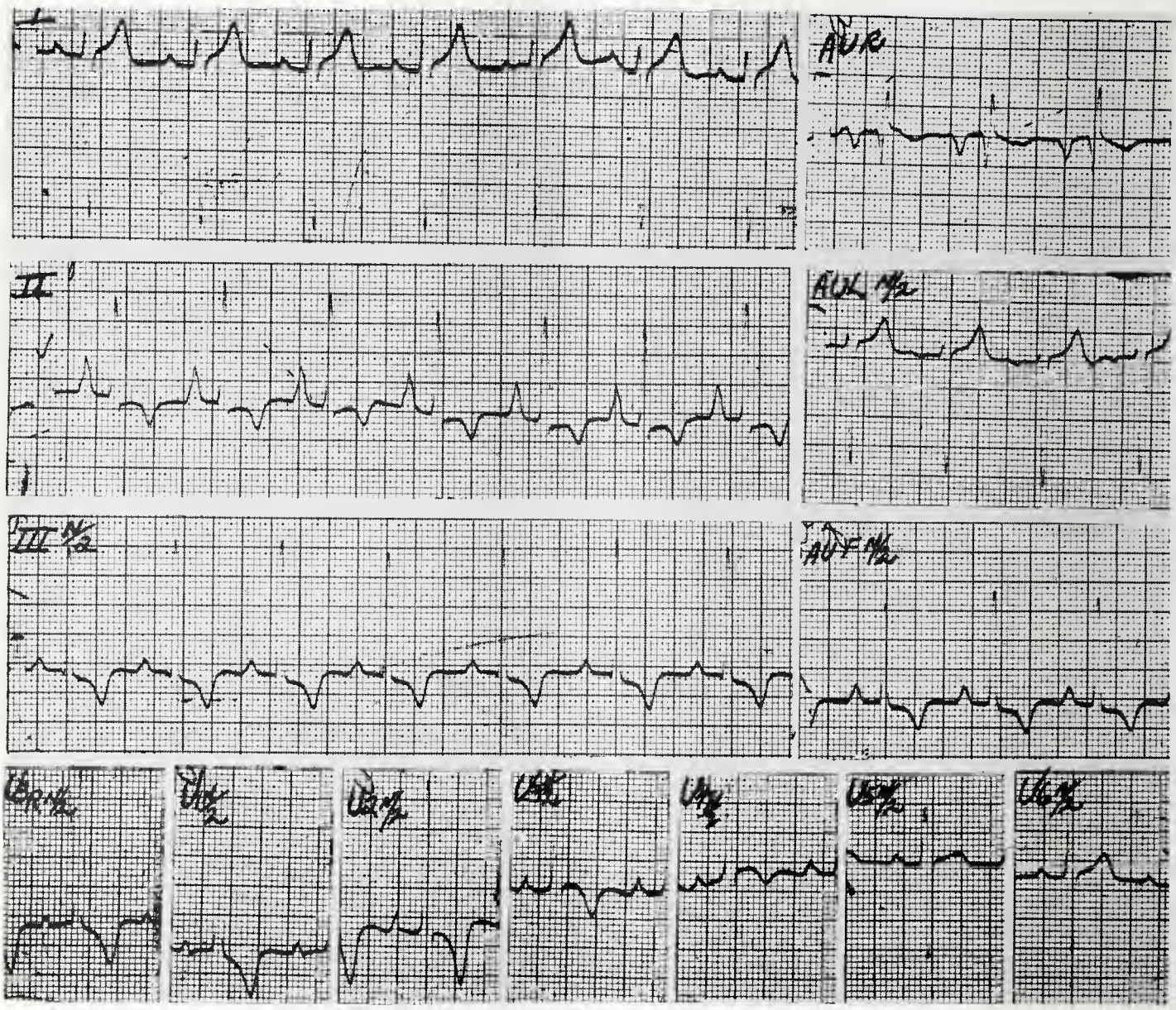
CARDIAC DIAGNOSIS: Congenital Heart Disease

OTHER DIAGNOSES: None

MEDICATION: None

HISTORY: Dyspnea most of life

(ANSWER ON PAGE 233)



The Department of Medicine, University of Arkansas Medical Center

James S. Taylor, M.D., Professor of Medicine

WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

(ANSWER ON PAGE 233)



No. 11-62-87 6 year-old male

History:

This child had the sudden onset of chills, fever and vomiting approximately six hours prior to admission.



PUBLIC HEALTH AT A GLANCE

The Responsibility of the Physician in Tuberculosis Control

Tuberculosis is a chronic disease resulting from an infection with a specific organism—mycobacterium tuberculosis var. hominis. Many other diseases mimic the x-ray and clinical picture of tuberculosis and must be differentiated. Tuberculosis is often complicated by a long latent period before active progressive disease develops. It is transmitted from man to man when a susceptible individual inhales minute airborne particles of sputum supporting viable tuberculosis organisms recently expectorated by an active contagious patient.[1] Infection of the close contacts of an active case has often occurred by the time the case is diagnosed. The most susceptible individuals are the very young and those with other complicating medical problems, such as diabetes or pregnancy. Treatment of the new active case with specific chemotherapy quickly reduces the infectiousness of most individuals[2]. The exact mode of treatment, i.e., length of hospitalization, home care program, surgery, combination of drugs, etc., must be made on an individual basis with an appreciation of the patient's total socio-economic as well as medical problem. All patients with proven tuberculosis and their contacts who are infected need lifelong follow-up. A decision regarding the treatment of infected contacts must also be made on an individual basis.

It seems clear that the primary responsibility in the long term management of the tuberculosis case and his infected contacts lies with the family physician. There is no question that the most important single step in the whole process is the development of an adequate physician-patient relationship. The initial "Medical Advice" the patient receives sets the stage for success or failure in the years of treatment and follow-up which will follow.

Certain guidelines may be helpful to physicians with this problem:

1. Insist upon an adequate diagnosis before developing a final plan. We should not stop short of bacteriologic proof of the diagnosis which, once made, demands lifelong follow-up.

2. Use accepted public health measures such as skin-testing of the patient and contacts with a specific antigen, i.e., PPD-intermediate strength, as an aid in the initial evaluation.

3. Use consultation freely but retain that all-important personal relationship with your patient, so necessary to any long-range plans. In Arkansas consultation is readily available, both privately and through referral hospitals and local chest clinics.

4. Utilize the services of your local health departments in encouraging the patient to complete the long course of evaluation and treatment. The most important of these services is clearly the home visit of the public health nurse, who can work with you in a variety of ways; from specific skin-testing to administration of drugs under your direction.

5. Be optimistic with the new proven case, no matter how severe. The results with treatment of new cases is almost 100% good if the patient is motivated to accept long term treatment.

IN SUMMARY:

The most important single step toward the achievement of the control of tuberculosis in Arkansas is the development of an adequate relationship between the patient and his family physician. The physician's responsibility here is clear.

W. Paul Reagan, M.D.
Director, Division of
Tuberculosis Control
Arkansas State Board of Health

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EDITORIAL

Host Defense Reactions

Alfred Kahn, Jr., M.D.

Austen and Cohn (New England Journal of Medicine, Vol. 268, p. 933, April 25, 1963) have recently extensively reviewed "Serum & Cellular Factors In Host Defense Reactions." The main noncellular substances are complement and antibody.

Complement is said to consist of a number of substances present in serum that are "cytotoxic for certain antibody carrying cells." The antibody determines the specificity of the reaction. Complement consists of four different parts or components. The different complement factors react in sequence and in certain instances require an additional chemical as magnesium. Studies of C^{11} one of the complement fractions indicate that it has an enzymatic action. One of the studies cited is the ability of complement and antibody to injure cells apparently by production of holes in the cell membrane letting occur a rapid exchange of intracellular and extra cellular fluid chemicals.

Serum has bactericidal actions. Complement and antibody definitely exert a bactericidal action; this is destroyed by heating to 56° centigrade. This complement-antibody action is thought to occur at the cell membrane; it is of interest that 700-2,000 molecules are estimated to be necessary to kill one typhoid bacillus. Another substance with antibacterial activity is lysozyme; lysozome is apparently a cell wall substrate that is exposed by the toxic action of the antibody-complement reaction. The serum has defenses against gram negative endotoxins; there are two: complement-antibody action which kills the bacteria and a defense against the free endotoxin which does not require complement or antibody.

Another substance in the serum which has been controversial is Properdin. Some research laboratories feel that it is a non-antibody substance which could combat bacteria and viruses; others have felt that it is a pool of natural antibodies. Austen and Cohn feel that Properdin is not a unique substance, but is a pool of natural low level antibodies.

One of the main defenses against bacteria is phagocytosis. Many bacteria require a modification of their surface before they can be Phagocytized; this is done by antibody. Surface phagocytosis may occur despite the absence of antibody if the leukocyte can trap the bacteria against a cell wall or in fibrin, etc. The authors observe that the body of experimental evidence indicates that "whereas the participation of complement appears to be critical to the bactericidal reaction, its role in phagocytosis is apparently to enhance an event capable of occurring without it; for that matter, capable of occurring without antibodies under suitable circumstances."

Immune adherence is another defense against micro-organisms. It describes the condition in which bacteria having been exposed to complement and antibody adhere to erythrocytes. Experimental evidence indicates that bacteria under these circumstances are more susceptible to phagocytosis. Conglutination is a less well understood reaction in which complement absorbed to an antigen-antibody complex is caused to clump by a factor known as conglutinin; the authors feel that this factor is likely an antibody to complement.

In addition to the serum factors in defense, the phagocytizing cells play a large part in host defense. Recent studies on neutrophils indicate

that the neutrophils are roughly divided into two fairly equal halves: a circulating portion whose half life is 6½ hours and a trapped portion caught in small vessels, etc. Of great interest is that the extra vascular neutrophil number 50 to 100 times those circulating and can thus replenish any losses. Mononuclear phagocytic cells are present in the blood and tissues. There is no known relationship between their number and defense capacity; these cells are known to live up to one month in lesions. When infection develops in a tissue, neutrophils, and later, mononuclear cells migrate, principally from the post-capillary venule, into the tissue spaces. The migrating cells usually leave the vessel by penetrating the basement membrane between endothelial cells but occasionally the endothelial cell is penetrated. Still a matter of dispute is why leukocytes migrate to a site of inflammation, or if they do not migrate, why they are present in large numbers at inflammatory sites.

Phagocytosis which is the ability of cells to ingest foreign particles as bacteria depends on the bacterial surface. The environment of the phagocyte, and the physiology of the phagocyte. Cohn and Austen cite how the capsular polysaccharides of certain streptococci prevents their engulfment. The second factor implies the enhanced phagocytic activity in the presence of complement and antibody; on certain surfaces bacteria may be phagocytized without either complement or antibody. With regard to the phagocytes physiology, it has been demonstrated that inhibition of certain enzyme systems in the phagocyte can inhibit phagocytosis, as glycolytic inhibitors prevent phagocytosis.

After a bacteria is ingested, there are three known substances in neutrophils which are antibacterial; lysozyme, acid and phagocytin. Phagocytin is very potent and it probably is a protein present in the neutrophil granules; it is not a lytic agent; Lysozyme is a lytic agent present in neutrophils and macraphages. Actually, most bacteria are killed in neutrophils, possibly all of an inoculum except 0.1%. After the bacteria breaks down in the leukocyte, the particles of degradation can be destroyed by the leukocyte, probably through hydrolytic enzymes.

Cellular immunity to bacteria exists but it has many unsolved facets. Cohn & Austen point out that this is a non-specific property in many instances; it is not specific for one bacteria species.

Cohn & Austen's review comprises 273 references and it is an outstanding collection of data on this topic of host defense.

Antibacterial Antibodies in Coliform Urinary Tract Infections

J. Williamson et al (H. Brainerd, University of California Medical Center, San Francisco) *Arch Intern Med* 114:222 (Aug) 1964

The sera of normal uninfected control women uniformly possessed "O" antibodies against a variety of coliform organisms isolated from infected urines. Acute pyelonephritis resulted in an increased titer of "O" antibodies against the infecting organism, which returned to preinfection levels within six months. Cystitis appeared to result in little or no antibody response. Serum antibody levels in patients with chronic pyelonephritis and asymptomatic bacteriuria were similar and were higher than those in uninfected control subjects. Serum "O" antibodies appeared to play no effective role in preventing the inception of pyelonephritis or in modifying its course.

Appearance and Behavior of Aortic Cells in Vitro

O. J. Pollak (9 Kings Highway, Dover, Del) and Tatsuo Kasai, *Amer J Med Sci* 248:71 (July) 1964

Explants of rabbits' aortae with and without cholesterol atherosclerosis were used for tissue cultures. In the course of four years, over 3,000 cultures were examined by light-, phase-, still-, and cine-photomicrography, in unstained preparations, and in those stained by various techniques and histochemical methods. Endothelial cells, fibroblasts and smooth muscle cells grew from intact aorta. In addition, lipid-bearing macrophages grew from experimental plaques. Characteristic differences in earliest appearance, longevity, morphological characteristics, propagation, and aging of the various cell types were recorded. The observations will provide a base line for metabolic studies of aortic cells grown in vitro.

MEDICINE IN THE NEWS

Applicants, Applications, Enrollment, and MCAT Data for Entering Class 1963-64 in United States Medical Schools

Table 1 summarizes application activity for 1963-64 and selected prior years. The total number of *applicants* for 1963-64 is 11.5 per cent greater than for 1962-63 and 23 per cent greater than for 1961-62 which was the low point following World War II. The increase in number of *applications* is proportionately greater. The ratio of applicants to acceptances is almost 2:1, a circumstance which permits admissions committees to be highly selective. Although the number of first-year places is shown as 200 greater for 1963-64 than for 1962-63, 94 of these are accounted for by a change in schedule of the Tennessee College of Medicine. The net increase in first-year enrollment is therefore only 106.

TABLE 1
Summary of Application Activity for 1963-64 and Selected Prior Years

1st Year Class	Total Applicants	Total Applications	Accepted Applicants	Ratio of Total Applicants: Accepted Applicants	Places in Class
1947-48	18,829	56,279	6,512	2.89	6,487
1952-53	16,763	56,319	7,778	2.16	7,425
1957-58	15,791	60,951	8,302	1.90	8,030
1958-59	15,170	59,102	8,366	1.81	8,128
1959-60	14,952	57,888	8,512	1.76	8,173
1960-61	14,397	54,662	8,560	1.68	8,298
1961-62	14,381	53,832	8,682	1.66	8,483‡
1962-63	15,847	59,054	8,959	1.73	8,642
1963-64	17,668	70,063	9,063	1.95	8,842

‡Includes 92 places at the California College of Medicine (this school not included in the other four columns for 1961-62).

Table 2 presents the mean scores on the Medical College Admission Test (MCAT) of accepted, rejected, and total applicants for the years 1952-53 through 1963-64. The Verbal (VA) and Quantitative (QA) scores taken together reflect scholastic aptitude. It is evident that there has been no decline in these measures of intellectual ability in the past 12 years. The Science scores, which measure knowledge of the required preparatory physical and biological sciences, similarly show no decline.

Table 3 lists the mean MCAT scores of applicants and of enrolled students classified according to the *location of the medical school*. Because many students apply to schools in more than one region, the scores of these students are included in more than one regional mean. Also, within each region, schools differ widely in ability level of enrolled students.

TABLE 2
Mean MCAT Scores of Accepted, Rejected, and Total Applicants for Years 1952-53 through 1963-64

Year	Accepted Applicants VA	QA	GI*	Sci	Rejected Applicants VA	QA	GI*	Sci
1952-53	522	526	519	525	465	459	467	457
1953-54	519	525	524	530	461	457	472	460
1954-55	517	521	530	533	457	455	473	459
1955-56	524	528	527	522	466	459	476	454
1956-57	525	525	526	519	463	458	473	445
1957-58	528	517	527	516	467	452	472	442
1958-59	527	532	520	523	461	456	467	441
1959-60	529	527	527	527	470	455	473	449
1960-61	527	533	527	533	464	453	473	449
1961-62	533	538	522	537	469	465	469	458
1962-63	544	537	541	545	475	464	485	460
1963-64	537	551	549	545	484	474	501	467

Year	Total Applicants VA	QA	GI*	Sci
1952-53	493	492	493	491
1953-54	494	495	501	499
1954-55	491	493	506	501
1955-56	497	496	503	490
1956-57	496	494	502	485
1957-58	500	487	502	482
1958-59	499	499	497	488
1959-60	504	497	505	494
1960-61	503	501	506	500
1961-62	509	510	501	507
1962-63	515	506	517	509
1963-64	511	515	526	508

TABLE 3
Mean MCAT Scores of Applicants and Enrolled Students by Geographic Region of Medical School
1963-64

Location of Medical School	VA Applicants	VA Enrolled Students	QA Applicants	QA Enrolled Students	GI* Applicants	GI* Enrolled Students	Sci Applicants	Sci Enrolled Students
Northeast	540	580	532	577	550	583	524	570
No. Central	514	523	521	552	530	539	514	545
Southeast	514	525	509	539	529	542	503	529
So. Central	488	498	492	518	509	518	487	513
West	517	541	517	564	530	552	512	564
Total U.S.	511	535	515	552	526	548	508	545

*General Information. Prior to May, 1962, this subtest of the MCAT was designated Understanding Modern Society.

THE MONTH IN WASHINGTON

A House-Senate conference committee deadlocked over the Johnson Administration's so-called medicare proposal before adjourning to campaign for the November elections.

It meant the death of such legislation for this year unless Congress should be called back in special session after the elections for further consideration of the legislation by the conference committee.

However, medicare supporters said they would revive the issue next year and make another attempt to get Congressional approval for hospitalization for the aged financed by a social security tax increase.

Failure of the committee to reach agreement on medicare also killed a cash increase in social security benefits. The House overwhelmingly voted for the cash increase. The Senate voted 49-to-44 to add an administration proposal that would have financed some hospitalization and nursing home care for the aged under social security.

A majority of the House conferees—Ways and Means Committee Chairman Wilbur D. Mills (D., Ark.), Reps. John W. Byrnes (R., Wis.) and Thomas B. Curtis (R., Mo.)—stood pat against medicare. Democratic Reps. Cecil R. King (Calif.) and Hale Boggs (La.) voted for it.

Four of the seven Senate conferees voted to the last in the conference for medicare. All Democrats, they were Sens. Clinton P. Anderson (N. Mex.), George A. Smathers (Fla.), Russell B. Long (La.) and Albert Gore (Tenn.). Opposing medicare were Finance Committee Chairman Harry F. Byrd (D., Va.) and Sens. John J. Williams (R., Del.) and Frank Carlson (R., Kan.).

The conferees from each the Senate and the House voted as a group with a majority determining how the group vote is cast.

Byrnes pointed out that the pro-medicare senate conferees had denied an increase in social security cash benefits by refusing to have any bill approved if it didn't include medicare.

"Adequate cash benefits and medicare cannot both be financed through a social security tax," Bynres said. "Adoption of the Senate amendment would make it impossible, as a practical matter, to adjust cash benefits in order to meet an increase in the cost of living. Cash benefits under social security would be 'frozen'."

Meantime, the federal-state Kerr-Mills is paying part or all of the costs of medical care, including hospitalization, for thousands of aged Americans who need such help.

Payments for medical care under the Nation's federally-aided public assistance programs neared the $1 billion mark in 1963—an increase of almost $150 million over 1962, according to recent Health, Education and Welfare Department figures.

Almost three-quarters of the total—nearly $745 million—was for medical assistance to the aged under the Kerr-Mills Old Age Assistance (OAA) and Medical Assistance for the Aged (MAA) programs. These costs alone increased by nearly $110 million over 1962.

Medical Assistance for the Aged, totalled $330 million, an increase of $79 million over 1962, while medical care costs for recipients of Old Age Assistance totalled $415 million, an increase of $31 million over 1962. The MAA program covers the aged who can provide for themselves ordinarily but need help on their medical expenses. The OAA program provides medical care for the aged on public welfare rolls.

Total costs of medical care in 1963 for the needy aged, blind, disabled, and families with children totalled $964,276,000, a large percentage of which was paid for hospitalization.

The figures for 1963 showed that for the federally-aided programs:

—Hospital bills accounted for about 40 percent of the expenditures, or $384,888,000, an increase of $52 million over 1962.

—Nursing homes received $333,867,000, an increase of $62 million over 1962.

—Physicians were paid $88,942,000, increased $7 million.

—Dentists received $21,203,000, increased $3 million.

—Drug payments totalled $89,216,000, increased $12 million.

—Various other services such as optometrists, pediatrists, special medical supplies, etc. totalled $46,072,000.

Medical care for needy children and their parents accounted for $111.7 million or $15 million over 1962. Recipients of aid to the permanently and totally disabled received medical care benefits of $97.9 million in 1963, about $21 million more than 1962; and aid to the needy blind medical care reached $10.8 million, an increase of $1 million.

Expenditures under the Kerr-Mills program, which was enacted late in 1960, are running much higher now than in 1962 because more states have the program in operation and its benefits have been expanded by some of the states that were among the first to start it. Kerr-Mills MAA expenditures totalled about $36.3 million for 185,641 aged patients in July 1964.

Kerr-Mills programs were in operation by the fall of 1964, in 38 states and four other jurisdictions: Alabama, Arkansas, California, Colorado,

Connecticut, Delaware, Florida, Hawaii, Idaho, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, Guam, Puerto Rico, the Virgin Islands and the District of Columbia.

Four other states—Georgia, Indiana, Mississippi and New Mexico—have authorized MAA programs. It will begin in Indiana on January 1, 1965 and is scheduled to start in Rhode Island by then.

The states themselves gave favorable reports on their experiences with the Kerr-Mills program. For instance, Gov. George Romney of Michigan, one of the first states to start a Kerr-Mills program, told the Senate Finance Committee that his state "is proud of its MAA program and of our efforts to provide better medical and hospital services for our senior citizens."

Romney's letter was prompted by charges that Michigan's Kerr-Mills program is inadequate, does not reach enough people, and is too heavy a financial burden for the state. The charges were made by HEW Assistant Secretary Wilbur Cohen. Romney cited facts to show that none of Cohen's charges were justified.

To inform the public on the broad range of health care available under Kerr-Mills to aged persons unable to pay for it themselves, the American Medical Association, in cooperation with state and county medical societies, conducted a nationwide educational program.

The educational program included explanations by physicians to patients, newspaper and magazine ads, and television and radio broadcasts. Much of it coincided with Community Health Week, Oct. 18-24.

The government has started an investigation of thousands of drugs in an effort to determine if some of them should be removed from the market.

Drug law amendments approved by Congress in 1962 established Oct. 9, 1964, as the deadline for submission by drug manufacturers of evidence that their products are effective.

Food and Drug Administration officials expect some of the drugs to be ruled off the market as worthless and others to be required to change their labels.

The investigation is expected to take three or four years. It will encompass all drugs marketed since 1938 with the possible exception of a group involved in a court case in Wilmington, Del.

FDA Medical Director Joseph F. Sadusk announced that 13 categories of drugs have been given priorities in the investigation. On top of the priority list are nutritional drugs called proteolytic enzymes which come in the form of pills and injections. Others on the priority list are fertility drugs, tranquilizers, iron preparations, pediatric drugs, antibiotic combinations, bioflavonoids, hormone creams, drugs used in pregnancy, antihistamines and local anesthetics.

ANSWER—What's Your Diagnosis?

Diagnosis: Pneumonia, "coin type."

X-Ray Findings: There is a round density in the right mid lung field which measured approximately 2 centimeters in diameter. Its borders are slightly irregular and somewhat indistinct. After seven days of antibiotic therapy the chest was normal. This type of pneumonia is uncommon. The differential diagnosis would include primary or metastatic tumor, granuloma, and septic infarct.

ANSWER—Electrocardiogram of the Month

AGE: 20 SEX: M BUILD: Slender
BLOOD PRESSURE: not recorded
CARDIAC DIAGNOSIS: Congenital Heart
OTHER DIAGNOSES: None
MEDICATION: None
HISTORY: Dyspnea most of life
INTERPRETATION: Rate: 85 Rhythm: Sinus
PR: .22 QRS: .08 QT: .33
ABNORMAL: Marked increase in voltage of P waves indicates right atrial enlargement and the very marked voltage of R in V3R, with abnormal S waves in V5, V6, indicates the diagnosis of marked right ventricular hypertrophy.
COMMENT: This tracing shows changes characteristic of such marked right ventricular and right atrial hypertrophy that a congenital obstructive lesion is almost invariably responsible. In this instance pulmonic stenosis was present.



New Book on Cancer

Dr. Joseph Song, an associate professor of pathology at the University of Arkansas School of Medicine, is the author of "The Human Uterus," a report of his seven-year study of the organ and uterine cancer. He recommends a "critical reconsideration" of present techniques of diagnosing a certain type of cancer in women.

Symposium on Heart Substitutes

There will be a symposium on "Heart Substitutes (Mechanical and Transplant)" on February 18, 1965, at the Marriott Motor Hotel in Philadelphia, Pennsylvania.



PERSONAL AND NEWS ITEMS

Air Force Reserve Medical Units Being Formed

At the Blytheville and Little Rock Air Force Bases, an Air Force Reserve Medical Unit is being established to function in conjunction with the base hospital. The reservists will train with the hospital one week-end each month and two weeks each summer. Each unit will be capable of functioning independently of the hospital; however, in most instances the medical personnel assigned to these Air Force Medical units will augment the base hospital staff if and when ordered to active duty. Medical Units must be commanded by a physician and eight physicians are needed to command these units. Air Force primarily interested in physicians who have completed their active duty obligation and would like to retain their reserve status; however, the program is open to all physicians provided they qualify for a commission in the Air Force Reserve. Interns may also apply for this program and may be accepted and participate before completing their internship. If interested in more information, write: Headquarters, Fourth Air Force Reserve Region (SUR), Randolph Air Force Base, Texas.

Dr. Ford Joins Hamilton Clinic

Dr. Robert Clayton Ford, Jr., who specializes in obstetrics and gynecology, has joined the staff of the Hamilton Clinic in West Memphis. Dr. Ford comes to Arkansas from Tennessee.

Doctors Attend Political Conventions

Dr. Eldon Fairley of Osceola attended the Republican National Convention in San Francisco in June and reported on the convention in a talk before the Osceola Kiwanis Club in August.

Among Arkansans attending the Democratic National Convention in Atlantic City in August were Dr. James M. Kolb of Clarksville and Dr. R. B. Robins of Camden. Dr. Kolb was an official delegate.

Dr. Martin Receives "Golden T" Award

Dr. J. A. Martin of Cabot, who received his doctor of medicine degrees in 1914 from the University of Tennessee, was honored by the University in September at commencement exercises. He was presented a Golden T certificate and pin

in recognition of the service which he has rendered to his community during the half century since graduation from medical school.

Hospital Commissioners Honored

Dr. Albert Johnson and Dr. Thomas Wortham were two of the ex-members of the Rebsamen Memorial Hospital Commission who were honored at a dinner in August. Both physicians served on the original commission. They were presented with certificates of appreciation praising their work.

Dr. Thorn Takes Post at St. Vincent

Dr. G. Max Thorn, a North Little Rock pediatrician, was appointed in September to the full-time job of director of medical education at St. Vincent Infirmary. Dr. Thorn will direct the Hospital's internship program, recruiting interns and planning the training program.

Professor Enters Private Practice

Dr. James H. Growdon, head of the department of surgery at the University of Arkansas Medical Center since 1947, resigned his position October 1st to enter the private practice of medicine in Little Rock. He will continue to serve on the faculty of the Medical Center on a part-time basis.

Dr. Saltzman Speaks on Rural Health

Dr. Ben N. Saltzman of Mountain Home, chairman of the Society's Committee on Rural Health, was guest speaker at the August meeting of the Calamine R.C.I. Club. Dr. Saltzman discussed the problems of Rural Health, stressing tetanus shots importance and urging more young people to enter the medical field.

Groups Hear Talk on "Medicare"

Dr. Paul Rodgers of Fort Smith addressed a recent meeting of the Fort Smith Chapter of the American Business Women's Association on the subject of "Medicare."

Beebe Doctor Files for School Director Position

Dr. Harold Short, Beebe physician, announced in August that he had filed for director in the School Election. He stated that he wanted to aid in improving the public school system in his district and to represent all of the people whose children attended Beebe schools.

Dr. Henry Discusses Traffic Safety

Dr. Lonise Henry, Chairman of the Society's Committee on Traffic Safety, was a guest speaker at the September 24th meeting of the PTA in Van Buren. She discussed problems of traffic safety.

Dr. Crow is Speaker

Dr. Neil Crow, a Fort Smith Radiologist, was guest speaker at the annual "Boss Night" banquet of the American Business Women's Association in Fort Smith in September. He discussed "X-Ray Therapy."

RESOLUTIONS



RESOLUTION

WHEREAS, the recent death of our colleague, Dr. Ralph A. Law, has caused the members of this Society to be saddened, and

WHEREAS, Dr. Law was an esteemed member of this Society for forty-three years, and

WHEREAS, he was highly respected in his chosen field of Radiology by both his patients and his colleagues, and

WHEREAS, he attained a respected and valuable position of service to this community,

BE IT THEREFORE RESOLVED:

THAT, we do pause with respect in memory of our deceased colleague, and

BE IT FURTHER RESOLVED:

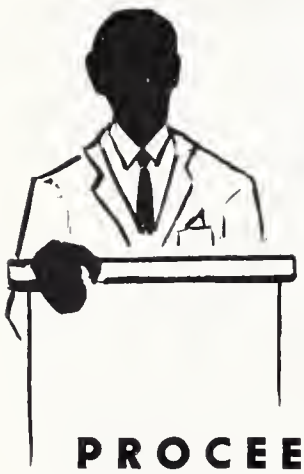
THAT, a copy of this resolution be forwarded to Dr. Law's family and

THAT, this resolution be made a part of the permanent records of this Society and

THAT, a copy be forwarded to the Journal of the Arkansas Medical Society for publication.

By Action of the Memorials Committee
Pulaski County Medical Society
John E. Greutter, M.D., Chairman

Read and Approved, October 6, 1964



PROCEEDINGS OF SOCIETIES

Washington

Dr. Will H. Mock, Dr. P. L. Hathcock and Dr. W. A. Fowler were honored by the Washington County Medical Society at a picnic in August at the home of Dr. Joe Bill Hall of Fayetteville. Dr. Mock has practiced in Prairie Grove for more than sixty years, Dr. Hathcock started his practice at Lincoln and maintained an office in Fayetteville for many years prior to his retirement several years ago, and Dr. Fowler still keeps office hours at Fayetteville. All are Life Members of the Society.

Baxter

Dr. Gene D. Ring of Memphis, Tennessee, addressed the August meeting of the Baxter County Medical Society at the hospital. He spoke on "Tumors of the Head and Neck." Members of the Baxter County nursing profession and physicians from Yellville and Harrison were guests at the meeting.



NEW MEMBERS

Crittenden County Medical Society announces that DR. ROBERT C. FORD, JR. is a new member. He was born at Memphis, Tennessee, and received his preliminary education from the University of Tennessee at Knoxville, Tennessee. In 1958, he received his M.D. degree from the University of Tennessee Medical School. He served his internship at Baptist Hospital in Memphis; he served in the U. S. Air Force from 1959 until 1961, and was in residency training from 1961 until 1964. Dr. Ford's specialty is obstetrics-gynecology and he is associated with the Hamilton Clinic at 300 South Rhodes in West Memphis, Arkansas.

A new member of Pulaski County Medical Society is DR. BARRY E. GERALD. A native of Greenville, Mississippi, he received his pre-medical education from the University of Mississippi. His M.D. degree was obtained from the University of Mississippi in 1958. He served his internship at Hermann Hospital in Houston, Texas. Dr. Gerald's specialty is radiology and he is now

Assistant Professor of Radiology, University of Arkansas Medical Center, Little Rock, Arkansas.

DR. DAISILEE H. BERRY is a new member of the Pulaski County Medical Society. A native of Hawaii, she received her pre-medical education from the University of Arkansas. Her M.D. degree was received from the University of Arkansas Medical School in 1959. She then completed an internship at the University of Arkansas Medical Center. Dr. Berry is now Assistant Professor of Pediatrics at the University of Arkansas Medical Center. She specializes in pediatrics and hematology.

A new member of Ouachita County Medical Society is DR. CHARLES HENRY FOHN. He is a native of Hondo, Texas, and received his preliminary education from Southwest Texas State College in San Marcos, Texas. He then enrolled at the Tulane University School of Medicine in New Orleans from which he was graduated in 1959. He practiced in Texas for five years. Dr. Fohn is associated with Dr. J. B. Jameson, Jr. in Camden, Arkansas. His specialty is general surgery.

Independence County Medical Society announces that DR. JOSEPH F. FARMER has been added to its roster of members. He was born at Newport, Arkansas, and received his premed from the University of Arkansas. His M.D. degree was received from the University of Arkansas School of Medicine in 1962. He practiced at Tuckerman, Arkansas for one year and is now practicing at the North Arkansas Clinic in Batesville. Dr. Farmer is a general practitioner.



BOOK REVIEWS

THE IMMUNOLOGICALLY COMPETENT CELL, Ciba Foundation Study Group No. 16, edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P. and Julie Knight, B.A., illustrated, pp. 110, published by Little, Brown and Company, Boston, 1963.

This is a very small book and has been published in honor of Sir Macfarlane Burnet, O. M. It is edited by G. E. W. Wolstenholme and among the participants in it is P. B. Medawar. The book is of considerable interest to the allergist and internist and has some outstanding participants. The book is not recommended to the medical public but is of considerable interest to the internist and to the physician interested in immunologic research. AK

DISORDERS OF LANGUAGE, a Ciba Foundation Symposium, edited by A. V. S. de Reuck, M.Sc., D.I.C., A.R.C.S. and Maeve O'Connor, B.A., illustrated, pp. 356, published by Little, Brown and Company, Boston, Massachusetts, 1964.

This book largely deals with aphasia and, as such, is of interest principally to neurologists. It is well organized and fairly easy to read. AK

THE SPECIALTIES IN GENERAL PRACTICE, Third Edition, Edited by Russell L. Cecil, M.D., Professor of Clinical Medicine, Emeritus, Cornell University Medical College, New York City, and Howard F. Conn, M.D., Staff, Uniontown Hospital, Uniontown, Pennsylvania, With Articles by John B. Gramlich, Dan R. Baker, Charles G. Child, 3rd, Nicholas W. Fugo, R. Cannon Eley, R. Townley Paton, Charles Q. Deluca, Charles M. Norris, David Myers, George M. Lewis, Douglas D. Bond, John M. Flumerfelt, Norman L. Roulet, David Tingle, Rex R. Conn and John Nelson, pp 676, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1964.

This book represents exactly what the title states, namely, a summary of some specialty practices outlined for the general physician. To the reviewer the purpose of this book is a little unclear—in other words, what is its niche? The authors of this book are specialists writing all too brief chapters on their specialty. The book is not without value and is recommended as a suitable brief reference for senior medical students, internists, and as a very short reference for the practicing general physician. AK

CONSULTATIONS IN MEDICINE: COMMON COMPLAINTS, a collection of medical articles from CONSULTANT magazine, pp. 206, illustrated, published by Smith, Kline & French Laboratories, Philadelphia, Pa., 1964.

This book makes no effort to be all inclusive. It covers a sprinkling of problems the general physician faces. It is in no sense a reference book. It is the sort of book one might browse through and, if there is some application for the text, it could be used and considered as an authentic source of information. AK

Effect of Orthophosphate on Urinary Pyrophosphate Excretion and the Prevention of Urolithiasis

H. Fleisch (Laboratory for Experimental Surgery, Davos, Switzerland), S. Bisaz, and A. D. Care, *Lancet* 1:1065 (May 16) 1964

Oral administration of inorganic orthophosphate induces a significant increase in urinary inorganic pyrophosphate excretion. Since this compound is a potent inhibitor of the precipitation of calcium phosphate and calcium oxalate, its increased excretion in the urine could account for the good clinical results of oral phosphate therapy in the prevention of urolithiasis.

TUBERCULOSIS  ABSTRACTS

Sponsored by Arkansas Tuberculosis Association

CURRENT THERAPY IN CYSTIC FIBROSIS

Once a fatal disease in young children, cystic fibrosis is now being treated with encouraging results. Therapy is directed at both the digestive and pulmonary aspects of the disease. Early diagnosis and intensive treatment can enable the patient to reach adulthood.

Cystic fibrosis once was almost 100 per cent fatal in early childhood. Improved diagnosis and treatment have changed the prognosis. The treatment program developed in the past six years at the Cystic Fibrosis Research, Teaching and Care Center of the Babies and Children's Division, University Hospitals of Cleveland, is reported here.

Cystic fibrosis is transmitted as a mendelian recessive trait and is one of the more common hereditary diseases, occurring in about one of every 2,000 live births.

The basic defect in the disease is unknown. Current evidence indicates that it is a disease of the exocrine glands. The mucous glands of the respiratory system and gastrointestinal tract (including the pancreas and liver) produce an abnormally thick and viscid mucus. The sweat glands produce sweat with abnormally high salt content and the parotid glands secrete excessively.

One of the aids in diagnosis is the sweat test. This is a simple, accurate, and safe diagnostic procedure. By providing localized sweat stimulation, the pilocarpine iontophoresis technique or an intradermal injection of methacholine eliminates the necessity for the less reproducible and sometimes hazardous thermal sweating procedures. When a sweat test is negative in a suspicious case, the test should be repeated. Diagnosis should not be made on the sweat test alone.

SYMPTOMS

The most prominent symptoms in cystic fibrosis arise from the digestive and pulmonary systems. The abnormally viscid secretions obstruct the pancreatic ducts and cause a deficiency of pancreatic digestive enzymes.

Pulmonary symptoms usually develop in early infancy. A chronic cough may be followed by recurrent episodes of pneumonia or by attacks of wheezing respiration which may be mistaken for bronchiolitis or asthma. The early pulmonary findings are not striking and might easily be dismissed. Mild signs of air trapping, a few rales, a slight increase in cough, and no weight gain must be looked for and treated vigorously to prevent the pulmonary lesion from progressing.

The primary pulmonary lesion is thought to be the accumulation of viscid secretions in the tracheobronchial tree. The mucus appears to impair the normal cleansing mechanism of the lung. The result is obstruction and stagnation of secretions and the development of secondary infection, which is usually due to *Staphylococcus aurens* and *Pseudomonas aeruginosa*.

If extensive damage occurs, bronchiectasis develops and abscess cavities form. These areas become reservoirs of infection. Reinfection, increased obstruction, and rapid progression of the pulmonary lesion are likely to occur.

TREATMENT

Therapy is directed against the primary obstructive pulmonary lesion, the secondary pulmonary infection, and the pancreatic exocrine defect and nutritional deficiencies.

Among the treatment methods used at the Center are nebulization therapy. This is a means of depositing particulate water in the respiratory tract by use of a mist tent, and of depositing various medications through intermittent aerosol inhalations.

All patients with pulmonary involvement should inhale a dense mist during sleeping hours. In periods of active pulmonary disease, continuous day and night therapy is sometimes used. Mist-tent therapy is used nightly as a prophy-

Carl F. Doershuk, M.D., and Leroy W. Matthews, M.D. *GP*, February, 1964.



The Doctor's Visit, Jan Steen 1626-1679, Mauritshuis, The Hague

In Diverticulosis and Diverticulitis...

METAMUCIL®

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psyllium hydrophilic mucilloid

"Diverticulosis ... a low-roughage diet is advisable.... Constipation is avoided, preferably by the daily use of Metamucil.

"Diverticulitis Mild, chronic symptoms of diverticulitis, such as diarrhea or flatulence also are treated[1] by low-roughage diet, adequate fluid intake and Metamucil...."

Usual Adult Dosage: One rounded teaspoonful of Metamucil (or one packet of Instant Mix Metamucil) in a glass of cool liquid one to three times daily.

Metamucil is available as Metamucil powder in containers of 4, 8 and 16 ounces and as flavored Instant Mix Metamucil in cartons containing 16 and 30 single-dose packets.

1. Welch, C. E., Diverticula of the Alimentary Tract, in Conn, H. (editor): Current Therapy—1961, Philadelphia, W. B. Saunders Company, 1961, pp. 224-225.

SEARLE

Research in the Service of Medicine

lactic measure even in patients with minimal evidence of pulmonary involvement.

Intermittent aerosol therapy permits the deposition of decongestant, antibiotic, bronchodilator, and mucolytic agents. Aerosol treatments are given three to four times a day.

The use of oxygen is discouraged, even in the hospital, unless it is specifically indicated.

Coughing and expectoration are encouraged before and during aerosol treatments. Each treatment is followed by postural drainage and physical therapy to help remove secretions from the major bronchi of the lung. The patient must be carefully positioned so that the major bronchi of the affected lobes or segments of the lung will drain efficiently.

Initial hospitalization is recommended for a complete evaluation and to bring the pulmonary disease under control. The parents are instructed in the nature of the disease, the reasons for the therapeutic procedures, and the techniques utilized.

Prophylactic antibiotics are not used after hospital discharge because of the danger of drug resistance. They may be prescribed on follow up in accord with sensitivity studies.

Upper airway disease is appropriately treated. This helps prevent pulmonary disease.

Patients who have a pancreatic insufficiency should receive treatment for the digestive disturbance. Patients without chronic infection usually have a voracious appetite and thus gain despite their digestive defect. Frequent feedings for small infants are usually necessary. Control of the pulmonary infection is the most important factor in maintaining them in a good nutritional state.

LOW-FAT DIET

Small infants should receive a low-fat, high-protein formula on demand and should be started on solid foods, including meat, when they are two months old. Older children are maintained on a high-protein diet.

Pancreatin is prescribed when a significant fat absorption defect is present, the dosage being based on the degree of the defect.

During warm weather, salt supplements help prevent heat prostration and shock.

All immunizations are carried out routinely. Influenza prophylaxis and the use of measles vaccine are especially important.

Emotional factors play a major role in any chronic disease—both for the patient and for the family. An interested, sympathetic physician can offer support for the patient and his family. Social service and psychiatric aid should be used freely.

The aim of treatment is to prevent progression if possible. Flare-ups do occur, even in well-treated children.

Since the initiation of the therapeutic program described in July, 1957, the annual mortality from cystic fibrosis among patients admitted to Babies and Children's Hospital has been less than 2 per cent annually.

This experience indicates that most patients who are diagnosed early and treated intensively should live into adulthood.



Polymyositis

P. J. Vignos, Jr. (2065 Adelbert Road, Cleveland), G. F. Bowling, and M. P. Watkins *Arch Intern Med* 114:263 (Aug) 1964

The effect of corticosteroids on 38 patients with polymyositis is evaluated. The successful end results with corticosteroids seem dependent upon the following principles of management: (1) initiation of treatment within three months of the onset, (2) initial high doses of corticosteroids, the equivalent of prednisone, 40 to 60 mg daily, (3) subsequent corticosteroid titration, guided by serial, clinical, and laboratory determinations, and (4) corticosteroid treatment for one year or longer. Thirty patients were treated with corticosteroids, of which 16 were managed on the basis of the above criteria and improved significantly. Other measures include the semi-quantitative functional muscle evaluation, manual muscle testing, determinations of serum enzymes and creatinuria, the muscle biopsy, and electromyography.

Membership Roster of the Arkansas Medical Society — 1964-65

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Hyder, Harold E. Saudi, Arabia
Lyford, Joseph H. 200 South Moose, Morrilton, FL 4-2456
Magie, Jimmie J. 200 South Moose, Morrilton, FL 4-2456
Mobley, Jack E. New Orleans, Louisiana
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Wells, Charles F. 601 South Moose, Morrilton, FL 4-2123
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Stroud, Paul T. 311 East Matthews, Jonesboro, WE 2-8323
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Hopkins, Ed G. 11th & Chestnut, Van 8uren, GR 4-2361
Kirksey, O. J. Mulberry, 997-2081
Savery, H. W. 618½ Main, Van 8uren, GR 4-2131
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Ford, Robert C., Jr. 300 South Rhodes, West Memphis, RE 5-1170
Hamilton, Ralph 8. 300 South Rhodes, West Memphis, RE 5-1170
Hare, T. S. Crawfordsville, TA 3-5374
Jay, Gilbert D., III 200 South Rhodes, West Memphis, RE 5-4610
Lanford, H. G. 308 South Rhodes, West Memphis, RE 5-3664
Little, C. J. 200 South Rhodes, West Memphis, RE 5-4610
Lubin, Milton 8ox 83, Turrell, DI 3-2501
McVay, L. C. Marion, PE 9-3525
Peeples, Chester W., Jr. 300 South Rhodes, W. Memphis, RE 5-1170
Pontius, David H., Jr. 300 South Rhodes, W. Memphis, RE 5-1170
Schoettle, Glenn P. 308 South Rhodes, West Memphis, RE 5-3664
Smith, 8edford W. 300 South Rhodes, West Memphis, RE 5-1170
Taylor, C. Herbert 200 South Rhodes, West Memphis, RE 5-4610
Winters, W. Lee Earle, GL 6-5561
Wright, William J. Earle, GL 6-5561

CROSS COUNTY

8eaton, K. E. 303 East Union, Wynne, 8E 8-2321
Crain, Vance J. 303 East Union, Wynne, 8E 8-2321
Hayes, Robert A. 411 South State, Wynne, 8E 8-3261
Hickman, R. L. State Sanatorium, Arkansas, OR 5-2121
Price, Thomas G. 411 South State, Wynne, 8E 8-3261

DALLAS COUNTY

Adams, Carl H. Carthage, 254-2211
Atkinson, H. H. 300 Cadiz, Fordyce, 352-2537
Delamore, John H. 1100 West 3rd, Fordyce, 352-2771
Estes, E. E. 205 East 3rd, Fordyce, 352-2626
Howard, Don G. 209 Spring, Fordyce, 352-3151
McMahen, H. S. V. A. Hospital, Little Rock, FR 4-3331

DESHA COUNTY

8iscoe, Goree 129 West Waterman, Dumas, EV 2-4331
8lackwell, O. G. 135 West Waterman, Dumas, EV 2-4878
Harris, Howard R. 207 South Elm, Dumas, EV 2-4425
Hellums, Julius H. 129 West Waterman, Dumas, EV 2-4331
Lazenby, Albert W. 135 West Waterman, Dumas, EV 2-4878
Moss, Swan 8. 202 North 4th, McGehee, CA 2-3141
Parker, Lee 8. Wolfe 8uilding, McGehee, CA 2-3015
Rands, Howard A. 514 East Farmer, Dumas, EV 2-4313
Robinson, Guy U. 207 South Elm, Dumas, EV 2-4425
Smith, H. T. 101 North 2nd, McGehee, CA 2-3216
Turney, Lonnie R. 2nd and Pine Sts., McGehee, CA 2-4044

DREW COUNTY

8inns, Van C. 201 East Trotter, Monticello, EM 7-3531
8usby, A. K. 816 North Hyatt, Monticello, EM 7-3246
Holder, J. B., Jr. 814 North Main, Monticello, EM 7-3556
Hyatt, C. Lewis 515 North Main, Monticello, EM 7-5393
Price, J. P., Jr. 216 South Main, Monticello, EM 7-5251
Wallick, Paul A. 216 South Main, Monticello, EM 7-5251

FAULKNER COUNTY

Archer, C. A., Jr. 919 Locust, Conway, FA 9-2946
8anister, 8. F., Jr. 1300 Parkway, Conway, FA 9-3824
8anister, 8ob G. 1300 Parkway, Conway, FA 9-3824
8enafield, Robert 8. 919 Locust, Conway, FA 9-2946
Daniel, Sam V. 574 Locust, Conway, FA 9-6111
Downs, J. H. 8ox 56, Vilonia, 796-2055
Dunaway, Edwin L. 919 Locust, Conway, FA 9-2946
Gordy, L. F., Jr. 552 Locust, Conway, FA 9-6881
Lieblong, Keller 1300 Parkway, Conway, FA 9-3824
Sneed, John W., Jr. 552 Locust, Conway, FA 9-6881
Taylor, Robert L. 810 Parkway, Conway, FA 9-3815

FRANKLIN COUNTY

8ollinger, W. H. 8ox 6, Charleston, 965-2632
Gibbons, David L. Ozark, MO 7-5241
Gibbons, W. H. Ozark, MO 7-5241
Hensley, William C. 8ox 428, Charleston, 965-2672
Jones, Evelyn R. Ozark, NF
Jones, James Laurence Ozark, MO 7-5121
Long, C. C. Ozark, MO 7-5121

GARLAND COUNTY

Adams, Frank M. 236 Central, Hot Springs, NA 3-8751
Arnold, William O. Alexandria, Louisiana
Atkinson, Robert H. 236 Central, Hot Springs, NA 3-6101
8ennett, R. V. 236 Central, Hot Springs, NA 3-9762
8lack, T. N. 133 Oakwood, Hot Springs, NA 3-2156
8ohnen, Loren O. 236 Central, Hot Springs, NA 3-6111
8racken, Ronald J. 236 Central, Hot Springs, NA 4-4478
8rewer, Howell W. Memphis, Tennessee
8urrow, Thomas E. 236 Central, Hot Springs, NA 3-8110
8urton, Frank M. 101 Whittington, Hot Springs, NA 3-6611
Chamberlain, Warren W. 330 Sixth Street, Hot Springs, NA 3-4477
Chenault, H. Clay 231 Central, Hot Springs, NA 3-1603
Clardy, Edgar K. 300 Prospect, Hot Springs, NA 4-1281
Coffey, George C. 236 Central, Hot Springs, NA 3-2731
Collier, T. J., Sr. 501 Malvern, Hot Springs, NA 3-8864
Daniel, R. L. State Hospital, 8enton, SP 8-2572
Dembinski, T. Henry 805½ Central, Hot Springs, NA 3-9781
Dodson, John W., Jr. 236 Central, Hot Springs, NA 3-4541
Durham, Thomas M., Jr. 236 Central, Hot Springs, NA 3-7717
Eisele, William Martin 101 Whittington, Hot Springs, NA 3-6611
Fotioo, George J. 236 Central, Hot Springs, NA 3-5121
French, James H. 101 Whittington, Hot Springs, NA 3-6611
Garner, O. P. 1705 Central, Hot Springs, NA 3-3521
Garratt, Charles E. 236 Central, Hot Springs, NA 3-2691
Goetze, Dorothy 104 Curve Street, Hot Springs, NA 3-4913
Goodrum, William A. 236 Central, Hot Springs, NA 3-7031
Graham, Richard F. 236 Central, Hot Springs, NA 3-4391
Gray, W. E. 236 Central, Hot Springs, NA 3-6111
Hebert, Gaston A. 802 Prospect Avenue, Hot Springs, NA 3-7216
Hoyt, Jerry L. 211 Hobson, Hot Springs, NA 4-4581
Jackson, Haynes G. 238 Woodbine, Hot Springs, NA 3-6628
Jackson, W. W. 328 Thompson 8uilding, Hot Springs, NA 3-4931
King, Leeman H. 236 Central, Hot Springs, NA 3-1545
Klugh, Walter G., Jr. 236 Woodbine, Hot Springs, NA 3-9216
Klugh, Walter G., Sr. 238 Woodbine, Hot Springs, NA 3-4511
Lee, D. C. 236 Central, Hot Springs, NA 3-2361
Lee, W. R. 236 Central, Hot Springs, NA 3-2361
Lovell, Claurence R. 414 Albert Pike, Hot Springs, NA 4-3606
McConkie, Stuart 8. 236 Central, Hot Springs, NA 3-7717
McCrary, Robert F. 238 Woodbine, Hot Springs, NA 3-6628
McFarland, Louis R. 211 Hobson, Hot Springs, NA 3-5752
McMahan, J. C. 306 Albert Pike, Hot Springs, NA 4-2111
Martin, L. G. 236 Central, Hot Springs, NA 3-6491
Mashburn, William R. Route 1, 8ox 148, Hot Springs, NA 3-4453
Murray, Du8ose 236 Central, Hot Springs, NA 3-7717
Parkerson, Carl R. 1421 Central, Hot Springs, NA 4-3341
Parkerson, C. W. 1421 Central, Hot Springs, NA 4-3341
Patterson, Ralph M. 231 Central, Hot Springs, NA 3-1603
Power, Allyn R. 236 Central, Hot Springs, NA 3-3102
Purdum, E. A. 236 Central, Hot Springs, NA 3-6161
Queen, George P. 236 Central, Hot Springs, NA 3-5221
Reed, Lon E. 1315 Central, Hot Springs, NA 4-1207
Rosenzweig, Joseph L. 236 Woodbine, Hot Springs, NA 3-1012
Rowland, E. Driver 236 Central, Hot Springs, NA 3-2181
Sammons, Vernon E. 236 Central, Hot Springs, NA 3-9581
Scott, Jett O. 236 Central, Hot Springs, NA 3-5121
Scully, Francis J. 236 Central, Hot Springs, NA 3-3157
Sloan, Clay A. Levi Hospital, Hot Springs, NA 4-1281
Smith, Euclid M. Dallas, Texas
Smith, Oliver A. Ark. Natl. 8ank 8ldg., Hot Springs, NA 3-1121
Smith, William K. 236 Central, Hot Springs, NA 3-2171
Springer, M. R., Jr. 236 Central, Hot Springs, NA 3-6111
Stough, D. 8. 236 Central, Hot Springs, NA 3-6921
Stough, D. 8., III 236 Central, Hot Springs, NA 4-3201
Strong, Leonell C. 1315 Central, Hot Springs, NA 4-1207
Tribble, A. H. 208 Trivista Left, Hot Springs, NA 4-1355
Wade, H. King, Jr. 231 Central, Hot Springs, NA 3-1603
Wade, H. King, Sr. 231 Central, Hot Springs, NA 3-1603
Woodcock, William A. 236 Central, Hot Springs, NA 3-9581
Wright, Jack 211 Hobson, Hot Springs, NA 3-6677
Wright, Paul O. 612 Albert Pike, Hot Springs, NA 3-2255
Yates, Andrew J. 211 Hobson, Hot Springs, NA 3-6677

GRANT COUNTY

Clark, Curtis 8. 200 South Rose, Sheridan, WH 2-0951
Irvin, Jack M. 205 High, Sheridan, WH 2-3171
Kelly, Miles F. Arkansas State Hospital, 8enton, SP 8-2572

GREENE-CLAY COUNTY

Andrews, Allie E., Jr. — 320 So. 10th, Paragould, CE 6-3508
Baker, Clark M. — 115 West Court, Paragould, CE 6-6356
Bradsher, Omer E. — 901 West Kingshighway, Paragould, CE 6-8765
Cash, Jack Q. — Corning, UL 7-4241
Clopton, O. H. — Rector, S9S-2671
Duckworth, Gordon L. — Hayti, Missouri
Duckworth, Hillard R. — Piggott Clinic, Piggott, LY B-2237
Futrell, J. Byron — Rector, 595-2611
Harper, Bland R. — Main Street, Monette, 4B6-5719
Isele, A. Frank — Piggott Clinic, Piggott, LY B-2237
Joffe, Irwin — Methodist Hospital, Paragould, CE 6-7733
McGaughey, Solon — 901 West Kingshighway, Paragould, CE 6-8765
McGuire, J. E. — Piggott, LY B-3230
McKelvey, E. D. — 112 West Court, Paragould, CE 6-8716
Maddox, A. H. — 901 West Kingshighway, Paragould, CE 6-8765
Page, Bill C. — Corning, UL 7-4241
Purcell, Donald I. — 1001 West Kingshighway, Paragould, CE 6-7623
Watson, Samuel D. — 421 West Kingshighway, Paragould, CE 6-8591
Williams, Jacob M. — 1001 W. Kingshighway, Paragould, CE 6-7623

HEMPSTEAD COUNTY

Branch, James W. — 426 South Main, Hope, PR 7-3471
Harris, C. Lynn — 205 South Elm, Hope, PR 7-2131
Harris, Lowell O. — 205 South Elm, Hope, PR 7-2131
Holt, Forney G. — 420 East 2nd, Hope, PR 7-6722
McKenzie, Jim — 601 South Elm, Hope, PR 7-2321
Martindale, James G. — 116 South Main, Hope, PR 7-3464
Martindale, Jud B. — 116 South Main, Hope, PR 7-3464
Wright, George H. — 420 East 2nd, Hope, PR 7-6722

HOT SPRING COUNTY

Berry, Morgan C. — 725 East Page, Malvern
Cobb, Russell W. — 1420 Potts, Malvern, ED 2-3112
Cole, John W. — 725 East Page, Malvern, ED 2-5641
Ellis, C. Randolph, President — 1004 South Main, Malvern, ED 2-6941
Kersh, Noah B. — 1415 Smith, Malvern, ED 7-7533
McCray, Raymond V. — 214 East Highland, Malvern, ED 2-2704
Paul, Robert K. — 1525 Reed, Malvern, ED 2-3705
Peters, Claude F. — 1420 Potts, Malvern, ED 2-2521
Rosenthal, George, Jr. — 1120 South Dyer, Malvern, ED 2-2571
White, Robert H. — 1004 Dyer, Malvern, ED 2-3481
Wise, John D. — 1219 South Main, Malvern, ED 7-6961

HOWARD-PIKE COUNTY

Dildy, Edwin V., Jr. — 122 West Hempstead, Nashville, TI 5-1933
Floyd, G. J., Jr. — Box 279, Murfreesboro, TI 5-3341
Holt, H. H. — Mineral Springs Highway, Nashville, TI 5-2406
Jones, William J. — Box 49, Glenwood, 35 6-3331
Smith, Uthel L. — Mineral Springs Highway, Nashville, TI 5-3880
Ward, Hiram T. — Murfreesboro, TI 5-2491
Wesson, John H. — 115 West Howard, Nashville, TI 5-4676
Wilmoth, Marion H. — 2nd and Sypert, Nashville, TI 5-4780

INDEPENDENCE COUNTY

Calaway, W. H. — North Arkansas Clinic, Batesville, RI 3-5251
Churchill, C. A. — 204 East 6th, Batesville, RI 3-5194
Evans, G. C. — P. O. Box 1411, Batesville, RI 3-2540
Farmer, Joseph F. — North Ark. Clinic, Batesville, RI 3-5251
Grasse, A. Meryl — East Nigeria
Grasse, John M., Jr. — Calico Rock, 297-3728
Gray, Paul — P. O. Box 31, Batesville, RI 3-2321
Hathcock, Alfred H. — 377½ East Main, Batesville, RI 3-3671
Hinkle, Charles G. — 946 East Boswell, Batesville, RI 3-2208
Jeffery, Paul H. — Bethesda, Batesville, RI 3-2667
Johnston, O. J. T. — P. O. Box B56, Batesville, RI 3-4127
Ketz, W. J. — 377 East Main, Batesville, RI 3-2371
Lytle, Jimmie — North Arkansas Clinic, Batesville, RI 3-5251
McAdams, V. D. — San Antonio, Texas
Monfort, J. J. — 120 West Broad, Batesville, RI 3-2207
Monroe, Howard U. — Mountain View, CO 9-3236
Robinette, James M. — Cave City, PI 6-3661
Slaughter, Bob L. — P. O. Box 1411, Batesville, RI 3-2540
Tatum, Harold M. — Melbourne, 36B-4344
Taylor, Chaney W. — North Arkansas Clinic, Batesville, RI 3-5251
Taylor, Charles A. — North Arkansas Clinic, Batesville, RI 3-5251
Walker, A. T. — Mammoth Springs, 625-3232
*Weathers, James L. — Salem
Wyatt, Finnis Q. — North Arkansas Clinic, Batesville, RI 3-5251

JACKSON COUNTY

Ashley, John D., Jr. — Newport Clinic, Newport, JA 3-3661
Green, Roger L. — 2nd and Laurel, Newport, JA 3-3661
Harris, M. Haymond — 3rd and Hazel Streets, Newport, JA 3-5871
Harris, Willie R. — Harris Hospital, Newport, JA 3-3271
Jackson, Jabez F. — 3rd and Hazel Streets, Newport, JA 3-5871
Norris, R. O. — Tuckerman, 349-2250
Stanfield, Wayne — 1513 Malcolm, Newport, JA 3-3321
Williams, Thomas E. — 2nd and Laurel Streets, Newport, JA 3-3661
Wright, John C. — 3rd and Hazel Streets, Newport, JA 3-5871

JEFFERSON COUNTY

Anderson, Charles W. — 110B½ Poplar, Pine Bluff, JE 4-B651
Atnip, Gwyn — 1409 Cherry, Pine Bluff, JE 5-3551
Barksdale, Barbara A. — Rison, FA 5-6224
Bruce, W. H. — 1400 Linden, Pine Bluff, JE 4-0244
Bryant, R. Frank — 1112 Linden, Pine Bluff, JE 4-4352
Burford, Thomas G. — 106 Pennsylvania, Pine Bluff, NF
Burroughs, Clement D. — 110B½ Poplar, Pine Bluff, JE 4-B651
Clark, O. W. — 4001 Cherry, Pine Bluff, JE 4-0761
Crane, H. A., Jr. — 1107 Cherry, Pine Bluff, JE 5-0B33
Cunningham, T. J., Jr. — 300 West 6th, Pine Bluff, JE 4-4723
Dickins, Robert D. — 1003 Cherry, Pine Bluff, JE 4-B141
Flowers, Cleon A. — Masonic Temple, Pine Bluff, JE 4-5523
Flowers, Richard H. — 2510 Cherry, Pine Bluff, JE S-72B0
Fowler, Arthur, Jr. — Sulpher, Okla.
Glasscock, R. E. — 709 West 6th, Pine Bluff, JE 4-0413
Hart, J. Clyde, Jr. — 1310 Cherry, Pine Bluff, JE 4-6210
Hundley, Louis K. — 100B West 11th, Pine Bluff, JE 4-B363
Hutchison, E. L. — National Building, Pine Bluff, JE 5-1562
Hyman, Carl E. — 121 East 4th Street, Pine Bluff, JE 4-3365
Irwin, Raymond A. — 1421 Cherry, Pine Bluff, JE 5-2200
James, William Joe — 1202 Cherry, Pine Bluff, JE 5-5400
Lawlah, Clyde A. — 329½ Main, Pine Bluff, JE 4-1912
Luck, Benjamin D., Jr. — 1301 West 35th, Pine Bluff, JE 4-3411
McCain, B. E. — Jefferson Hosp., Pine Bluff, JE 5-6B00
McDonald, Robert L. — 110B½ Poplar, Pine Bluff, JE 4-B651
Maynard, Ross E. — National Building, Pine Bluff, JE 4-5732
Meredith, William R. — 917 Cherry, Pine Bluff, JE 4-3561
Monroe, S. C. — 1421 Cherry, Pine Bluff, JE 5-2200
Morris, Harold J. — 1030 Poplar, Pine Bluff, JE 4-0B22
Nixon, William R. — 709 West 6th, Pine Bluff, JE 4-0413
Payne, Virgil L. — 802 West 5th, Pine Bluff, JE 4-561B
Perry, Virgil B. — 1019 Cherry, Pine Bluff, JE 5-4141
Pierce, J. R., Jr. — 1202 Cherry, Pine Bluff, JE 5-3443
Pollard, A. E. — Memphis, Tenn.
Raney, Oliver C. — 1021 Cherry, Pine Bluff, JE 4-5B61
Reed, E. Frank, Jr. — 916 Cherry, Pine Bluff, JE 5-0121
Reed, Ulysses S. — Masonic Temple, Pine Bluff, JE 4-6910
Reid, Charles W. — 1113 Cherry, Pine Bluff, JE 4-0240
Rhyne, James T. — 1310 Cherry, Pine Bluff, JE 4-6210
Rice, James B. — 1111 West 12th, Pine Bluff, JE 5-5522
Robinette, Joseph S. — 1115 Cherry, Pine Bluff, JE 5-2372
Russell, Allen R. — 1024 Poplar, Pine Bluff, JE 5-2252
Searcy, James B. — Altheimer, PO 6-2601
Simmons, Calvin R. — 1002 West 14th, Pine Bluff, JE S-3213
Spillyards, J. S. — National Building, Pine Bluff, JE S-5B6B
Stern, Howard S. — 1315 Linden, Pine Bluff, JE 4-0342
Sullenberger, A. G. — Jefferson Med. Center, Pine Bluff, JE 4-4407
Talbot, George B. — 1421 Cherry, Pine Bluff, JE 5-2200
Tisdale, Alfred D., Jr. — 1515 West 42nd, Pine Bluff, JE 5-6616
Townsend, Thomas E. — 1310 Cherry, Pine Bluff, JE 4-6210
Tracy, Charles C. — 1421 Cherry, Pine Bluff, JE 5-2200
Walker, John K. — 1107 Cherry, Pine Bluff, JE S-0B31
Wilkins, Walter J., Jr. — 1421 Cherry, Pine Bluff, JE 5-2200
Wineland, H. L. — 917 Cherry, Pine Bluff, JE 4-3561
Wirthlin, Milton R. — 405 W. 2nd, Pine Bluff, JE 5-2142
Wooley, Ralph R. — 1310½ Cherry, Pine Bluff, JE 4-2261

JOHNSON COUNTY

Callaway, James R. — P. O. Box 472, Clarksville, PL 4-2007
*Hardgrave, George L. — Clarksville
Kolb, James M., Jr. — 4301 West Markham, Little Rock, MO 6-9461
Kolb, James M., Sr. — P. O. Box 472, Clarksville, PL 4-2007
Manley, Robert H. — 307 East Main, Clarksville, PL 4-3B20
Scarborough, W. R. — 109 West Fulton, Clarksville, PL 4-2512
Shrigley, Guy P. — 416 Sevier, Clarksville, PL 4-2043

LAFAYETTE COUNTY

Beaty, W. R. — 119 Spruce, Lewisville, 921-4353
Cross, Charles — 317 Main, Stamps, LE 3-4561
Harrison, R. H. — 4301 West Markham, Little Rock, MO 6-9461
Hunter, Robert W. — P. O. Box 458, Lewisville, 921-4222
Lee, Willie J. — Box 276, Stamps, LE 3-4461

LAWRENCE COUNTY

Cruse, E. J. — Black Rock, TR B-6209
Elders, J. B. — 321 S. W. 3rd, Walnut Ridge, TU 4-3162
Glenn, Wayne B. — 4301 West Markham, Little Rock, MO 6-9461
Gregory, Lloyd F. — Imboden, VO 9-2274
Hickman, James H. — Walnut Ridge, TU 4-4222
Joseph, Ralph — V. A. Hospital, North Little Rock, FR 2-B361
Smith, Bob G. — Walnut Ridge, NF
Whittington, J. J., III — Walnut Ridge, TU 4-3552

LEE COUNTY

Dozier, Floyd S. — 29 North Poplar, Marianna, CY 4-2107
Gray, Dwight W. — 110 West Chestnut, Marianna, CY 4-3131
Hays, William C., Jr. — 100 West Main, Marianna, CY 4-2323
McLendon, Mac — 29 West Columbia, Marianna, CY 4-2711
Nowell, E. C. — Route 3, Box 22A, Marianna, CY 4-2616

LINCOLN COUNTY

Dickerson, C. H., Jr. — State Hospital, Benton, SP B-2572
Dixon, Charles W. — Gould, CO 3-4416
Freeland, James W. — Star City, MA B-4226
Petty, Richard C. — Star City, MA B-4292

LITTLE RIVER COUNTY

Armstrong, James D. — Ashdown, TW B-3306
Peacock, N. W., Jr. — Ashdown, TW B-3306
Shelton, Joseph G., Jr. — Ashdown, TW B-3306

LOGAN COUNTY

Center, W. B. — State Sanatorium, OR 5-2121
Facundus, Bruce E. — 210 Ellsworth, Booneville, OR 5-2300
Jones, W. Duane — State Sanatorium, OR 5-2121
McConnell, Samuel P. — 113 West Main, Booneville, OR 5-3232
Parker, B. G. — 121 East 3rd, Booneville, OR 5-2101
Redman, John W. — Tucson, Arizona
*Riley, J. D. — State Sanatorium
Smiley, George W. — State Sanatorium, OR 5-2121
Smith, Charles McD. — Paris, YO 3-2191
Smith, James T. — Paris, YO 3-3221

LONOKE COUNTY

Cooper, Edward J. 520 Northeast 4th, England, VI 2-2696
Gartman, J. F. Court Street, Carlisle, LU 2-2596
Holmes, B. E. 305 West Front, Lonoke, OR 6-6560
McEntire, H. E. 4814 Lynn Lane, North Little Rock, SK 3-1116
Martin, J. A. Box 257, Cabot, BA 4-9086
Parker, William M. DeValls Bluff, 4741
Strickland, Luther J. 520 Northeast 4th, England, VI 2-2696
Washburn, C. Yulan 111 West Main, Cabot, BA 4-2141

MILLER COUNTY

Barnes, Walter C., Jr. 401 East 5th, Texarkana, 773-2121
Bransford, Robert M. 401 East 5th, Texarkana, 773-2121
Brown, J. Royston Route 3, Box 540L, Texarkana, 793-4511
Burnett, J. W. 414 Hazel, Texarkana, 774-7301
Burroughs, James C. 119 East 6th, Texarkana, 774-5262
Cantrell, Frank P. 619 Main, Texarkana, 792-7151
Causey, Hunter A. Cotton Belt RR Hospital, Texarkana, 772-1113
Chappell, Robert H. Box 1288, Texarkana, 794-5943
*Daniel, N. B. Texarkana
Davis, Elmer L. 317 State Line Avenue, Texarkana, 792-8231
Gary, Lloyd E. 619 Main, Texarkana, 792-7151
Goesl, Andrew G. 119 East 6th, Texarkana, 774-4702
Good, Louis P. 401 East 5th, Texarkana, 773-2121
Griffin, John S. 619 Main, Texarkana, 792-7151
Harrell, William B., Jr. 317 State Line, Texarkana, 792-8231
Harrison, James W. 401 East 5th, Texarkana, 773-2121
Hughes, Robert P. 401 East 5th, Texarkana, 773-2121
Jones, John Walter 401 East 5th, Texarkana, 773-2121
Kemp, Karlton H. 408 Hazel, Texarkana, 774-5181
Kirkpatrick, R. R. 119 East 6th, Texarkana, 772-0222
Kittrell, J. B. 610 Walnut, Texarkana, 774-6107
Laws, J. K. St. Michael's Hospital, Texarkana, 774-7297
Leslie, Charles L. 315 East 5th, Texarkana, 772-0231
Lowe, Betty Ann 401 East 5th, Texarkana, 773-2121
Pickett, R. W. 226 East 6th, Texarkana, 774-5622
Robinson, William D. 401 East 5th, Texarkana, 773-2121
Rodgers, N. L. 401 East 5th, Texarkana, 773-2121
Rushing, Louis U. P. O. Box 1912, Texarkana, 792-1191
Schneble, Richard J. 401 East 5th, Texarkana, 773-2121
Sears, Joseph W. 401 East 5th, Texarkana, 773-2121
Smith, William D. 119 East 6th, Texarkana, 772-0111
Teasley, Gerald H. 401 East 5th, Texarkana, 773-2121
Thompson, Charles A. 619 Main, Texarkana, 792-7151
Thompson, Thomas Paul 401 East 5th, Texarkana, 773-2121
Thornton, William D. 619 Main, Texarkana, 792-7151
Wakefield Elmer G. P. O. Box 2035, Texarkana, 772-0853
White, Luther R., Jr. Boston, Mass.
Wicker, Eugene H. St. Michael's Hospital, Texarkana, 773-2651
Wilhelm, Frieda McKinney, Texas
Williams, J. F. 220 West 5th, Texarkana, 793-3032
Wren, Herbert B. 619 Main, Texarkana, 792-7151
Yarbrough, Charles P. 1102 Main, Texarkana, 793-5608
Young, Mitchell 322 East 5th, Texarkana, 772-8264

MISSISSIPPI COUNTY

Ball, E. H. 515 North 6th, Blytheville, PO 3-4575
Beasley, Joe E. Normal, Illinois
Brock, Charles C., Jr. 527 North Sixth, Blytheville, PO 3-8118
Brownson, J. F. Tucson, Arizona
Elliott, J. Q. 209 West Ash, Blytheville, PO 3-4548
Ellis, N. B. Wilson Medical Center, Wilson, 2411
Fairley, Eldon 616 West Lee, Osceola, LO 3-2686
Fairley, Julian 616 West Lee, Osceola, LO 3-2686
Files, James B. Columbia, Missouri
Go, Alex S. Y. 2004 West Main, Blytheville, PO 3-7223
Godley, M. L. 527 North 6th, Blytheville, PO 3-8118
Green, W. O., Jr. 903 Chickasawba, Blytheville, PO 3-6802
Hard, John W. 527 North 6th, Blytheville, PO 3-8118
Hart, Sybil R. Chickasawba Hospital, Blytheville, PO 3-8107
Hart, Wade A. Chickasawba Hospital, Blytheville, PO 3-8107
Holcomb, C. E. 511 North 6th, Blytheville, PO 3-3922
Hubener, L. L. 201 East Main, Blytheville, PO 2-2021
Hubener, Louis F. Gainesville, Florida
Johnson, I. R. 510 West Main, Blytheville, PO 2-2041
Johnson, R. L. 825 Highland, Blytheville, PO 3-6201
Jones, Herbert 529 North 10th, Blytheville, PO 3-8032
Lawrence, Jesse A. Adams Street, Wilson, 2411
Massey, Lorenzo D. 307 West Hale, Osceola, LO 3-6242
Osborne, Merrill J. 527 North 6th, Blytheville, PO 3-8118
Payne, Troy State Hosp., Little Rock, MO 6-0181
Polk, J. T. Keiser, 526-2121
Pollock, George D. 608 West Lee, Osceola, LO 3-2608
Rainwater, W. T. 527 North 6th, Blytheville, PO 3-8118
Rankin, James D. 307 West Hale, Osceola, LO 3-6242
Rhodes, R. F. 608 West Lee, Osceola, LO 3-2608
Rodman, T. N. Box 260, Leachville, 539-6337
Shaneyfelt, E. A. Manila, 561-4744
Sims, Hunter, Jr. 529 North 10th, Blytheville, PO 3-8032
Sims, Hunter, Sr. 107 North 2nd, Blytheville, PO 3-4458
Taylor, G. Wayne P. O. Box 746, Leachville, 539-6337
Utley, F. E. 515 North 6th, Blytheville, PO 3-4575
Walls, James M. Walls Hosp., Blytheville, PO 3-4406
Webb, James Jackson (Jack) 520 W. Main, Blytheville, PO 2-2131
Workman, W. W. 527 North 6th, Blytheville, PO 3-8118

MONROE COUNTY

Dalton, M. L. 510 Main, Brinkley, RE 4-4161
David, N. C., Jr. 108 West Ash, Brinkley, RE 4-2212
McKnight, Edward D. Bank of Brinkley Bldg., Brinkley, RE 4-4234
Pupsta, Benedict F. Box 432, Clarendon, 747-3321
Stone, Herd E., Jr. Holly Grove, 2271
Walker, Walter L. 114 South New Orleans, Brinkley, RE 4-3242
Williams, J. P., Jr. 127 South New Orleans, Brinkley, RE 4-1331

NEVADA COUNTY

Avery, Charles D. 427 E. 6th, Prescott, 887-2625
Cox, James E. 305 Holly, Prescott, 887-3010
Hairston, Glenn G. 317 E. 3rd, Prescott, 887-2211
Harrell, L. J. 117 E. 2nd, Prescott, 887-2312
Hesterly, Charles A. 419 E. 6th, Prescott, 887-2685
Hesterly, Jacob B. 419 E. 6th, Prescott, 887-2685
*Pool, William B. H. Bodcaw

OUACHITA COUNTY

*Byrd, E. J. Camden
Dalton, Perry J. 415 Hospital Drive, S.W., Camden, TE 6-5013
Dedman, J. L., Jr. 415 Hospital Drive, S.W., Camden, TE 6-5013
Drewrey, L. E. 530 Jefferson St., S.W., Camden, TE 6-5058
Ellis, Joseph L. 957 McCullough, Camden, TE 6-2146
Ellis, William B. Stephens, ST 6-2551
Fohn, Charles H. 110 Harrison Avenue, S.W., Camden, TE 6-5088
Guthrie, James 530 Jefferson St., S.W., Camden, TE 6-5058
Hawley, James W. P. O. Box 38, Camden, TE 6-5710
Hearnsberger, Henry Stephens, ST 6-2811
Hout, Judson N. 530 Jefferson St., S.W., Camden, TE 6-5058
Jameson, John B., Jr. 110 Harrison, S.W., Camden, TE 6-5088
Killough, Larry R. 530 Jefferson, Camden, TE 6-5058
King, B. D. Ouachita County Hospital, Camden, TE 6-9325
Lewis, R. C. P. O. Box 675, Camden, TE 6-5753
Meek, Tom J. 415 Hospital Drive, S.W., Camden, TE 6-5013
Miller, John H. 415 Hospital Drive, S.W., Camden, TE 6-5013
Ozment, L. V. 530 Jefferson St., S.W., Camden, TE 6-5058
Partee, Norf G. 223 Jefferson, S.W., Camden, TE 6-2339
Pruitt, Willard H. 416 Hospital Drive, Camden, TE 6-5744
*Rhine, T. E. Thornton
Robins, R. B. 30 N. Michigan, Chicago, Illinois
Robins, Rowland R. State Sanatorium, Booneville, OR 5-2121
Taylor, George D. Sparkman, 678-2406
Wyckoff, William H. 917 Washington, Camden, NF

PHILLIPS COUNTY

Barrow, John H. Oakland Avenue, Helena, HI 4-2622
Bell, L. J. Pat 215 Porter, Helena, HI 4-2163
Berger, A. A. 801 Perry, Helena, HI 4-2781
Biggs, William W. Helena Hospital, Helena, HI 4-6411
Butts, James W. 708 McDonough, Helena, HI 4-2006
Capes, Bernard 130 Plaza, West Helena, JU 5-2621
Chrestman, R. L., Jr. 631 Oakland Avenue, Helena, HI 4-3294
Connolly, William B. 173 Oakland, Helena, HI 4-7756
Ellis, William A., Jr. 603 Porter, Helena, HI 4-3037
Faulkner, Henry N. 513 Porter, Helena, HI 4-7401
Hill, William K. 513 Porter, Helena, HI 4-7401
*Jones, Lynwood B. Helena
Kirkman, C. M. T. 1105 Perry, Helena, HI 4-2712
Kurts, Evan J. 308 Plaza, West Helena, JU 5-2144
McCarty, C. P. 513 Porter, Helena, HI 4-7401
Oldham, H. B. 105 South 3rd, West Helena, JU 5-7581
Paine, W. T. 513 Porter, Helena, HI 4-7401
Tonymon, Daniel Marvell, 829-2721
Turner, Cleveland, Jr. 85 Highland Park Dr., Helena, HI 4-3289
Wise, James E., Jr. Marvell, 829-2386

POLK COUNTY

Austin, Calvin D. 606 Mena, Mena, EX 4-1441
Hefner, David P. 600 West 7th, Mena, EX 4-3344
Redman, Pierre 513 Mena, Mena, EX 4-2277
Rogers, Henry N. 600 West 7th, Mena, EX 4-3344
Wood, John P. 907 Mena, Mena, EX 4-4221

POPE-YELL COUNTY

Ashcraft, Ted E. 809 West Main, Russellville, 967-2156
Draeger, Louis A. Danville, HY 5-2252
Gardner, Ellis P. O. Box 400, Russellville, 967-2242
Gavlas, Frank E. 310 North 2nd, Dardanelle, CA 9-4225
Harris, Walter P. 522 Main, Danville, HY 5-2714
Heidgen, Martin F. 1808 West Main, Russellville, 967-1333
Henry, J. A. 511 West Main, Russellville, 967-2345
King, William Ernest, Jr. 511 West Main, Russellville, 967-2345
Lane, Walter H., Jr. 625 Water, Dover, AC 8-3305
Linton, Arthur C. Hector, BU 4-3011
Lowrey, Douglas H. 809 West Main, Russellville, 967-2156
Luker, Jerome 505 Union, Dardanelle, CA 9-4172
Martin, Damon G. H. Ola, HU 9-5231
Millard, Roy I. 511 West Main, Russellville, 967-2345
Mobley, Max James 111 North El Paso, Russellville, 967-2242
McNamara, William L. St. Mary's Hospital, Russellville, 967-2841
Pennington, James O. Ola, HU 9-5231
Ring, Gene D. 505 Union, Dardanelle, CA 9-4172
Teeter, Brooks R. 511 West Main, Russellville, 967-2345
Webb, Lewis A. 209 Locust, Dardanelle, 229-3319
Wilkins, Charles F. 511 West Main, Russellville, 967-2345
Williams, David M. 809 West Main, Russellville, 967-2156

PULASKI COUNTY

Abbott, William Wood 409 Shamrock, Little Rock, MO 6-2471
Abraham, James H. 900 North University, Little Rock, MO 4-3951
Adametz, J. H. Donaghey Building, Little Rock, FR 5-5547
Alford, Dale 115 East Capitol, Little Rock, FR 5-0111
Allen, Edward S. 413 North University, Little Rock, MO 3-8309
Allen, Hoyt R. Donaghey Building, Little Rock, FR 2-5518
Armstrong, Howard M. 12th and Bishop, Little Rock, FR 2-5626
*Atkinson, Shelby North Little Rock
Ault, C. C. V. A. Hospital, North Little Rock, FR 2-8361
Autry, Daniel H. 500 South University, Little Rock, MO 4-4166
Bailey, H. A. Ted, Jr. 1610 West 3rd, Little Rock, FR 2-1811

Baldwin, Deane G. 806 North University, Little Rock, MO 4-3901
Barnhard, Fay M. 4301 West Markham, Little Rock, MO 6-9461
Barnhard, Howard J. 4301 West Markham, Little Rock, MO 6-9461
Bauer, Frank M. 500 So. University, Little Rock, MO 4-2245
Bearden, James R. Baptist Hospital, Little Rock, FR 4-3351
Becquet, N. J. 401 Hall Building, Little Rock, FR 5-4419
Bennett, B. A. 809 North Arthur, Little Rock, MO 4-2964
Berry, Daisilee H. 4301 West Markham, Little Rock, MO 6-9461
Berry, Frederick B. 500 South University, Little Rock, MO 6-0222
Betts, Charles S. 500 South University, Little Rock, MO 3-9169
Beverly, Nolan F. St. Vincent Infirmary, Little Rock, MO 4-4261
Bizzell, Ross Exchange Building, Little Rock, FR 6-2309
Black, Hal R., Jr. Donaghey Building, Little Rock, FR 2-7265
Black, Millard W. 705 North Ash, Little Rock, MO 3-5413
Blakely, R. M. 106 East Capitol, Little Rock, FR 2-1554
Bradburn, Curry B., Jr. Donaghey Building, Little Rock, FR 2-7265
Briggs, B. P. 500 South University, Little Rock, MO 4-4117
Brinkley, Roy A. 1111 Bishop, Little Rock, FR 5-1177
Brizzolara, A. J. 500 South University, Little Rock, MO 4-4381
Broach, R. Fred 1717 Louisiana, North Little Rock, FR 4-0873
Brown, Martha M. 2014 Blvd., Little Rock, MO 3-7697
Brown, T. Duel 1120 Marshall, Little Rock, FR 5-3376
Brown, Willis E. 4301 West Markham, Little Rock, MO 6-9461
Buchanan, F. R. 500 South University, Little Rock, MO 4-4324
Buchman, Joseph A. 500 South University, Little Rock, MO 6-0222
Bumpas, Joe H. St. Vincent Infirmary, Little Rock, MO 4-4261
Burger, Robert A. Ark. Baptist Hospital, Little Rock, FR 4-3351
Busby, John V. 5008 Kavanaugh, Little Rock, MO 4-1566
Byrd, Lucas M., Jr. 36 Lake Shore Drive, Little Rock, LO 5-6046
Calcote, Robert A. Donaghey Building, Little Rock, FR 4-5969
Calhoun, Joseph D. 5804 West Markham, Little Rock, MO 4-3824
Carnahan, Robert G. State Hospital, Little Rock, MO 6-0181
Carruthers, F. Walter Donaghey Building, Little Rock, FR 5-3372
Cazort, Alan G. 4001 West Capitol, Little Rock, MO 4-1596
Cheairs, D. B. 721 West 2nd, Little Rock, FR 4-2272
Choate, Hoyt L. 1120 Marshall, Little Rock, FR 2-7032
Christeson, William W. Donaghey Building, Little Rock, FR 6-2409
Christian, John D. 5520 West Markham, Little Rock, MO 6-9431
Chudy, Amail 1801 Maple, North Little Rock, FR 2-0119
Church, B. L. 321 Maple, North Little Rock, FR 4-7796
Church, Marion M. 321 Maple, North Little Rock, FR 5-1106
Clark, William A. Donaghey Building, Little Rock, FR 5-7228
Cohen, Louis A. V. A. Hospital, Little Rock, FR 4-3331
Compton, John Nye 4700 Crestwood Drive, Little Rock, MO 3-5876
Cook, Raymond C. 601 Scott, Little Rock, FR 5-8273
Cooper, William G. 500 South University, Little Rock, MO 6-0149
Cope, Ellis P. Donaghey Building, Little Rock, FR 4-8884
Cornett, James K. 5905 R Street, Little Rock, MO 3-6958
Cosgrove, K. W., Jr. 516 Scott, Little Rock, FR 4-6338
Cosgrove, K. W., Sr. 516 Scott, Little Rock, FR 4-6338
Cottrell, Wm. J. 111 East 7th, Little Rock, FR 4-1136
Craig, Marion S., Jr. 500 South University, Little Rock, MO 6-0106
Crews, James Travis 4316 West Markham, Little Rock, MO 3-3121
Cross, J. B. 500 South University, Little Rock, MO 6-0126
Crow, Jan W. 1000 West Main, Jacksonville, YU 2-2141
Cull, S. T. W. 902 West 2nd, Little Rock, FR 5-8073
Cullen, Phillip T. 500 South University, Little Rock, MO 4-4171
Cummins, Bryce 31 Broadmoor Drive, Little Rock, LO 5-7450
Daughety, J. D. 111 Shamrock Drive, Little Rock, MO 3-2849
Davis, Malcolm W. V. A. Hospital, North Little Rock, FR 2-8361
Dean, Gilbert O. Donaghey Building, Little Rock, FR 5-7784
Deer, Philip James, Jr. 601 Scott, Little Rock, FR 5-8273
Dennis, James L. Norman, Oklahoma
Dilday, Thomas F., Jr. 500 So. University, Little Rock, MO 6-0381
Dildy, Hal Golden, Colorado
Dillaha, Calvin J. 500 South University, Little Rock, MO 4-4161
Dishongh, Howard A. Donaghey Building, Little Rock, FR 4-0248
Dodge, Eva F. Lansing, Michigan
Donaldson, J. K. 101 West 24th, Little Rock, FR 2-7546
Downs, J. W. 500 South University, Little Rock, MO 6-5922
Drompp, Benjamin W. 4301 W. Markham, Little Rock, MO 6-9461
Dulaney, Frank M., Jr. 1120 Marshall, Little Rock, FR 4-9568
Dungan, W. T. 500 South University, Little Rock, MO 4-4117
Durham, James W. 112 North Bailey, Jacksonville, YU 2-2125
Easley, Edgar J. State Health Dept., Little Rock, FR 4-6361
Ebert, Richard V. 4301 West Markham, Little Rock, MO 6-9461
*Eubanks, R. M. Little Rock
Farris, Guy R. 810 West 2nd, Little Rock, FR 2-2281
Fein, Norman N. Waldon Building, Little Rock, FR 4-8441
Fish, Stewart A. 4301 West Markham, Little Rock, MO 6-9461
Fitzgibbon, Carney, Jr. 410 South Martin, Little Rock, MO 6-8861
Flack, James V., Jr. 814 North University, Little Rock, MO 3-9474
Fletcher, Elizabeth D. Donaghey Building, Little Rock, FR 4-0248
Fletcher, T. M. 500 South University, Little Rock, MO 4-3021
Forbis, Orie L., Jr. 4301 West Markham, Little Rock, MO 6-9461
Foster, Julian L. 3901 New Benton Hwy., Little Rock, LO 5-0366
Fowler, Shelton F. Ark. State Hospital, Little Rock, MO 6-0181
Fulmer, H. Ray Donaghey Building, Little Rock, FR 4-1649
Fulmer, John M. 5410 West Markham, Little Rock, MO 4-3142
Fulton, William L. 513 Main, North Little Rock, FR 5-2433
Gates, Stanley M. Veterans Administration, Little Rock, FR 4-3331
Gay, Ellery C., Jr. New Orleans, Louisiana
Gay, Ellery C., Sr. Rivercliff Apts., Little Rock, MO 3-1851
Gentling, Allen A. St. Vincent Infirmary, Little Rock, MO 4-4261
Gerald, Barry E. 4301 West Markham, Little Rock, MO 6-9461
Gibbins, Jack C. 2309 Durwood, Little Rock, MO 6-8712
Gillespie, A. Tharp 500 South University, Little Rock, MO 4-3838
Gillespie, E. Clark 5600 West Markham, Little Rock, MO 3-6313
Good, Henry H. 4301 West Markham, Little Rock, MO 6-9461
Gordon, Vida H. 4301 West Markham, Little Rock, MO 6-9461
Graham, G. Grimsley 5322 West Markham, Little Rock, MO 3-9433
Graupner, Kathryn I. V. A. Hospital, North Little Rock, FR 2-8361
Gray, Edwin F. Donaghey Building, Little Rock, FR 6-1321
Gray, Herschel F. 413 Scott, Little Rock, FR 5-6416
Greutter, John E., Jr. Donaghey Building, Little Rock, FR 2-6139
Grimes, Harry Austin 5324 West Markham, Little Rock, MO 6-5407
Growdon, James H. 500 South University, Little Rock, MO 4-4146
Hagler, James L. 500 South University, Little Rock, MO 4 4377
Hall, Alastair D. 306 Chester, Little Rock, FR 6-2348
Hamilton, Wilburn M. Donaghey Building, Little Rock, FR 4-8633
Hammett, Dorothy V. 4524 West 10th, Little Rock, MO 6-0181
Hara, Masauki 4301 West Markham, Little Rock, MO 6-9461
Hardeman, Daniel R. 1014 West 3rd, Little Rock, FR 2-4684
Hardin, Joe H. 500 South University, Little Rock, MO 4-4181
Harrel, J. A., Jr. 4601 Woodlawn, Little Rock, MO 3-8374
Harrison, A. Vale Waldon Building, Little Rock, FR 4-3815
Hawley, Harold B. 4301 West Markham, Little Rock, MO 6-9461
Hayes, James Donald Donaghey Building, Little Rock, FR 4-0219
Hayes, J. Harry, Jr. Donaghey Building, Little Rock, FR 6-2312
Headstream, James W. 500 So. University, Little Rock, MO 4-4364
Hedges, Harold H. 814 North University, Little Rock, MO 3-9474
Hefley, Bill F. 4001 West Capitol, Little Rock, MO 4-1596
Henker, Fred O., III 4301 West Markham, Little Rock, MO 6-9461
Henry, John Forrest, Jr. 516 Scott, Little Rock, FR 4-6338
Henry, Marion J. 810 West 2nd, Little Rock, FR 5-6449
Henry, Robert L., Jr. 810 West 2nd, Little Rock, FR 5-6449
Herron, John T. State Health Dept., Little Rock, FR 4-6361
Hickey, Joseph P. P. O. Box 2856, Little Rock, FR 4-3941
Hill, Harlan H. 1120 Marshall, Little Rock, FR 2-7032
Holitik, George F. 3200 Bryant, Little Rock, LO 5-8261
Hollenberg, Henry 500 South University, Little Rock, MO 4-4747
Hollis, N. T. Waldon Building, Little Rock, FR 4-4161
Holmes, Harlan C. 1120 Marshall, Little Rock, FR 2-5040
Holt, L. G. Donaghey Building, Little Rock, FR 4-8806
Honeycutt, Thomas D. 509 Cross, Little Rock, FR 6-1116
Honeycutt, Wesley M. 500 South University, Little Rock, MO 4-4161
Hoover, Paul W. 1120 Marshall, Little Rock, FR 4-0789
Howard, John G., Jr. 500 South University, Little Rock, MO 3-1120
Hudgins, Paul T. 1120 Marshall, Little Rock, FR 2-7502
Hundley, John M. 412 Cross, Little Rock, FR 5-5338
Hyatt, David T. Donaghey Building, Little Rock, FR 2-7741
Ish, G. W. S., Sr. Century Building, Little Rock, FR 2-7025
Jackson, George W. State Hospital, Little Rock, MO 6-0181
Jackson, Morris A. 1304 Wright Avenue, Little Rock, FR 4-7940
Jansen, G. Thomas 500 South University, Little Rock, MO 4-4161
Johnson, Glenn H. 3 Armistead Road, Little Rock, MO 3-0216
Johnson, Henry D. 500 South University, Little Rock, MO 4-4171
Johnson, James A. 112 North Bailey, Jacksonville, YU 2-2125
Johnston, Thomas G. 5512 West Markham, Little Rock, MO 4-3904
Jones, Kenneth G. 4300 West Markham, Little Rock, MO 6-9494
Jones, Robert D. 500 South University, Little Rock, MO 4-4747
Jones, Samuel T. 4301 West Markham, Little Rock, MO 6-9461
Jordan, William K. Donaghey Building, Little Rock, FR 4-0826
Juniper, Kerrison, Jr. 4301 West Markham, Little Rock, MO 6-9461
Junkin, Ruth V. A. Hospital, North Little Rock, FR 2-8361
Kahn, Alfred, Jr. 1300 West 6th, Little Rock, FR 4-5589
Kennedy, Chas. H. 3115 J. F. Kndy. Blvd., N. Little Rock, SK 3-9464
Kilbury, M. J., Jr. 500 South University, Little Rock, MO 4-1322
Kilbury, M. J., Sr. Donaghey Building, Little Rock, FR 2-7740
Kirby, Jesse M. Route 1, Box 560, North Little Rock, WI 5-3055
Kittler, Frederick J. 4001 West Capitol, Little Rock, MO 4-1596
Kolb, Agnes 1522 West 10th, Little Rock, FR 2-3491
Kolb, B. T. 1522 West 10th, Little Rock, FR 2-3491
Kolb, William Payton 1120 Marshall, Little Rock, FR 2-3325
Kozberg, Oscar Ark. State Hospital, Little Rock, MO 6-0181
Kreth, K. M. 5800 West Markham, Little Rock, MO 3-9441
*Kuehne, B. A. Little Rock
Kumpuris, Frank G. 415 North University, Little Rock, MO 4-1521
Kuperman, Irving 5300 Mabelvale Pike, Little Rock, LO 5-5911
Kuykendall, Sam J. 500 South University, Little Rock, MO 4-2736
Lamb, William A. 4001 West 11th, Little Rock, MO 3-1452
Lane, John W. Baptist Hospital, Little Rock, FR 4-3351
Langston, Harold D. Baptist Hospital, Little Rock, FR 4-3351
Laurens, John 501 North University, Little Rock, MO 3-3351
*Law, Ralph A. Little Rock
Lawson, Mason G. 701 West Markham, Little Rock, FR 4-4311
Lester, Joe K. 1518 Main, North Little Rock, FR 5-0102
Levy, Jerome S. 500 South University, Little Rock, MO 4-4181
Lewis, W. S. 900 North University, Little Rock, MO 4-3951
Lilly, Kenneth E. 7901 Ark-Mo Hwy., North Little Rock, TE 5-4441
Lincoln, Ben M. 5322 West Markham, Little Rock, MO 3-9433
Logue, Richard M. 601 North University, Little Rock, MO 6-0144
Longstreth, Alvin E. 1312 Fair Park, Little Rock, MO 3-5545
Ludwig, Frank R. 27th & Pike Ave., North Little Rock, FR 6-3426
Lyons, Virgle E. 115 E. Broadway, North Little Rock, FR 2-5246
McCaskill, Melvin R. 500 South University, Little Rock, MO 4-4131
McClain, Monroe D. 1120 Marshall, Little Rock, FR 4-7484
McClintock, Everett M. 5600 W. Markham, Little Rock, MO 3-6313
McGinnis, Max R. 500 South University, Little Rock, MO 4-4131
McKenzie, Charles N. 412 Cross, Little Rock, FR 5-5338
McMillin, Lamar 1311 Louisiana, Little Rock, FR 4-6531
McMillion, Stephen D. 1800 Maple, North Little Rock, FR 2-3575
McRae, Washington M. 819 Ridgecrest, Little Rock, MO 3-8272
Mallory, George L. 111 Lynch Drive, North Little Rock, WI 5-9271
Martin, Lee A. 500 South University, Little Rock, MO 4-4364
Mathis, Edwin F. 4601 Woodlawn, Little Rock, MO 3-8374
Matthews, Robert R. 4301 West Markham, Little Rock, MO 6-9461
Means, Ben Dallas 4124 West 11th, Little Rock, MO 3-0213
Means, Paul N. 1120 Marshall, Little Rock, FR 2-7502
Miles, David A. V. A. Hospital, Little Rock, FR 4-3331
Millard, Irvin L. 4300 West Markham, Little Rock, MO 6-9494
Miller, Harold N. Port Charlotte, Florida
Milner, E. L. 500 South University, Little Rock, MO 4-4318
Mitchell, George K. 900 North University, Little Rock, MO 4-3951
Molholm, Hans B. State Hospital, Little Rock, MO 6-0181
Moore, Jim J. 500 South University, Little Rock, MO 6-5466
Moore, Rex N. 1000 West Main, Jacksonville, YU 2-2141
Morgan, F. E. 3225 J. F. Kennedy Blvd., N. Little Rock, SK 3-4772
Morris, Woodbridge E. 5324 W. Markham, Little Rock, MO 4-2111
Morrison, James R. 500 S. University, Little Rock, MO 4-3914
Murphy, Horace R. 4300 West Markham, Little Rock, MO 6-9494
Murphy, James E., Jr. 1800 Maple, North Little Rock, FR 6-3296
Murray, Rosemary C. State Hospital, Little Rock, MO 6-0181
Napper, George S. 513 Main, North Little Rock, FR 5-2433
Nettles, John B. 4301 West Markham, Little Rock, MO 6-9461
Newbern, David H. 500 South University, Little Rock, MO 4-3078

Nisbett, James M. 517 East 7th, Little Rock, FR 5-2252
Nixon, Ewing M. 1000 Wolfe, Little Rock, FR 5-2446
Norton, Joseph A. 500 South University, Little Rock, MO 4-3914
*Nowlin, Walter A. Roland
*Oates, Charles E. North Little Rock
Oates, Gordon P. 1710 West 10th, Little Rock, FR 4-9332
Ogden, Mahlon D. 1400 West Capitol, Little Rock, FR 2-0035
Oglesby, W. R. 5302 New Conway Hwy., N. Little Rock, SK 3-7516
O'Neal, Walter H. 1111 Bishop, Little Rock, FR 5-1177
Orr, William S. 500 So. University, Little Rock, MO 4-3043
Padberg, Frank T. 500 So. University, Little Rock, MO 6-5466
Pappas, James J. 1610 West 3rd, Little Rock, FR 2-1811
Pehrson, Nils C. 500 South University, Little Rock, MO 6-0381
Peters, John E. 4301 West Markham, Little Rock, MO 6-9461
Phillips, Bert L. 1403 Main, North Little Rock, FR 6-2840
Phillips, Samuel Donaghey Building, Little Rock, FR 4-9534
Phipps, Woodrow E., Jr. 108 E. 4th, No. Little Rock, FR 4-4821
Pierce, John A. 4301 West Markham, Little Rock, MO 6-9461
Pitcock, James A. Memphis, Tennessee
Pool, Chalmers S. VA Hospital, North Little Rock, FR 2-8361
Porter, James O., Jr. 500 South University, Little Rock, MO 4-3838
Porter, William I. 500 South University, Little Rock, MO 4-3066
Price, Ben O. 500 South University, Little Rock, MO 4-4166
Pringos, Andrew A. Nat'l Old Line Bldg., Little Rock, FR 5-3231
Proctor, Clark B. V.A. Hospital, North Little Rock, FR 2-8361
Raney, Thomas J., Jr. 924 Marshall, Little Rock, FR 6-1375
Reagan, Grady W. 124 Crystal, Little Rock, MO 3-2670
*Reagan, Luther D. Little Rock
Reagan, W. Paul State Health Building, Little Rock, FR 4-6361
Reed, Ewing C., Jr. 1119 Bishop, Little Rock, FR 4-3716
Reese, William G. 4301 West Markham, Little Rock, MO 6-9461
Regnier, George G. 500 S. University, Little Rock, MO 4-3914
*Rhinehart, Barton A. Little Rock
Rhinehart, William J. Donaghey Building, Little Rock, FR 6-1814
Richardson, Robert E. 500 South University, Little Rock, MO 4-4321
Richmond, Samuel V. Donaghey Building, Little Rock, FR 2-5101
Riegler, Nicholas W., Jr. 1024 Scott, Little Rock, FR 5-3326
Riegler, Nicholas W., Sr. 1024 Scott, Little Rock, FR 5-3326
Riggin, John T. 4301 West Markham, Little Rock, MO 6-9461
Riley, William H. 3901 New Benton Hwy., Little Rock, LO 5-0366
Ritchie, E. J. 1401 Main, North Little Rock, FR 2-5253
Robinson, J. M. Raines Building, Little Rock, FR 2-0351
Rodgers, Clyde D. 500 South University, Little Rock, MO 4-4131
Rosenbaum, Carl A. Donaghey Building, Little Rock, FR 2-5101
Ross, Robert W. 4316 West Markham, Little Rock, MO 3-3121
Ross, S. William 900 North University, Little Rock, MO 4-3951
Rothert, Frances C. Guatemala City
Samuel, John M. 805 West 4th, Little Rock, FR 5-6468
Sanderlin, Joseph H. Donaghey Building, Little Rock, FR 5-7228
Schneider, Mildred F. V.A. Hospital, North Little Rock, FR 2-8361
Schratz, Bruce E. 3423 Pike Ave., North Little Rock, SK 3-6616
Schultz, John C. 900 North University, Little Rock, MO 4-3951
Schwander, Howard 1115 Bishop, Little Rock, FR 5-2366
Schwarz, W. J. Donaghey Building, Little Rock, FR 4-4712
Scruggs, Joe B., Jr. Baptist Hospital, Little Rock, FR 4-3351
Selakovich, Walter G. 500 South University Little Rock, MO 6-2824
Sessoms, William D. 1120 Marshall, Little Rock, FR 2-7502
Shannon, Robert F. 4301 West Markham, Little Rock, MO 6-9461
Shipp, Harvey D. 500 South University, Little Rock, MO 4-4321
Shorey, Winston K. 4301 West Markham, Little Rock, MO 6-9461
Shuffield, H. Elvin (Sec'y) 1000 Wolfe St., Little Rock, FR 5-2446
Shuffield, Joe F. 1000 Wolfe St., Little Rock, FR 5-2446
Simmons, Nolan L. 623 Beech, Little Rock, MO 6-5555
Simpson, N. Henry, Jr. Donaghey Building, Little Rock, FR 5-2801
*Sinton, David Little Rock
Sloan, James M. 5322 West Markham, Little Rock, MO 4-3814
Smith, Charles A., III 500 South University, Little Rock, MO 6-2882
Smith, Huie H. 1517 Main, North Little Rock, FR 4-7011
Smith, James L. 623 Woodlane, Little Rock, FR 4-6491
Smith, John McC. 4000 Woodlawn, Little Rock, MO 6-6570
Smith, John W. 1415 West 6th, Little Rock, FR 4-1622
Smith, Mose, III 5600 West Markham, Little Rock, MO 3-6313
Smith, Purcell, Jr. 4001 West Capitol, Little Rock, MO 4-1596
Smith, W. Myers 3421 A Pike St., North Little Rock, SK 3-3661
Snodgrass, W. A., Jr. Donaghey Building, Little Rock, FR 4-2326
Spitzberg, I. J. Donaghey Building, Little Rock, FR 2-3670
Springer, Worthie R., Jr. 103 E. 2nd, North Little Rock, FR 4-2635
Stainton, Robert M. 500 So. University, Little Rock, MO 4-4175
Stanley, Joe Pat Pike Plaza Shpg. Ctr., No. Little Rock, FR 4-4071
Stathakis, John Veterans Hospital, North Little Rock, FR 2-8361
Steele, W. L. 5520 West Markham, Little Rock, MO 6-9431
Stewart, Bill Dave 415 North University, Little Rock, MO 4-1521
Stotts, John R. 5905 "R" Street, Little Rock, MO 3-6958
Stover, A. R. Holbrook, Arizona
Strauss, Alvin W., Jr. Waldon Building, Little Rock, FR 2-1828
Stroope, Geo. F. 4117 J. F. Kennedy Blvd., N. Little Rock, SK 3-3487
Stuckey, James G. 500 South University, Little Rock, MO 4-4383
Sundermann, Richard H. 4301 W. Markham, Little Rock, MO 6-9461
Swindoll, Bryant S. Ark. State Bd. of Health, Little Rock, FR 4-6361
Taylor, James S. 4301 West Markham, Little Rock, MO 6-9461
Teeter, John A. 806 North University, Little Rock, MO 4-3901
Thomas, James G. Donaghey Bldg., Little Rock, FR 4-6379
Thomas, Peter O. 1310 Cantrell Road, Little Rock, FR 4-5703
Thomas, Philip E. 418 Hall Building, Little Rock, FR 2-7732
*Thompson, Ewell I. Little Rock
Thompson, Lawrence L. 1310 Cantrell Road, Little Rock, FR 5-5381
Thompson, Samuel B. 5520 West Markham, Little Rock, MO 6-9431
Thorn, Garland Max St. Vincent Infirmary, Little Rock, MO 4-4261
Tolbert, Louis E., Jr. 500 South University, Little Rock, MO 6-0136
Toombs, Vernon L. 500 South University, Little Rock, MO 4-4117
Valentine, Robert G. 1120 Marshall, Little Rock, FR 4-9568
Vaughter, W. Roger 4301 West Markham, Little Rock, MO 6-9461
Wallace, Deane D. 500 South University, Little Rock, MO 4-4377
Wallis, Charles D. 810 West 2nd, Little Rock, FR 5-6449
Walt, James R. 500 South University, Little Rock, MO 4-4146
Ward, Joseph P. 1120 Marshall, Little Rock, FR 2-7502
Warden, J. R. Donaghey Building, Little Rock, FR 4-4063
Warford, Walton R. V.A. Hospital, North Little Rock, FR 2-8361
Washburn, A. M. 605 North Spruce, Little Rock, MO 3-5832
Wassell, John R. 5305 Kavanaugh, Little Rock, MO 4-1525
Watkins, Charles J. 500 South University, Little Rock, MO 4-2661
Watkins, John G., Jr. Donaghey Building, Little Rock, FR 2-7026
Watson, C. Fletcher Donaghey Building, Little Rock, FR 2-7513
Watson, Robert Donaghey Building, Little Rock, FR 5-5547
Weare, John L. 1120 Marshall, Little Rock, FR 4-9568
Webb, V. T. 701 West Markham, Little Rock, FR 4-4311
Weber, James R. 1110 West Main, Jacksonville, YU 2-2108
Wells, Travis L. Donaghey Building, Little Rock, FR 5-7121
Wenger, Carl E. 721 West 2nd, Little Rock, FR 4-2272
White, Oba B. Century Building, Little Rock, FR 4-3609
Whitehead, R. H., Jr. Donaghey Building, Little Rock, FR 2-2960
Wilbur, E. Lloyd Baptist Hospital, Little Rock, FR 4-3351
Wilkes, Elbert H. 5322 West Markham, Little Rock, MO 3-4114
Wilson, James D. 5300 Mabelvale Pike, Little Rock, LO 5-5810
Wilson, James W. 500 So. University, Little Rock, MO 4-4166
Wortham, Thomas H. 1000 West Main, Jacksonville, YU 2-2141
Young, William O. 112½ East 7th, Little Rock, FR 4-8656
Zell, Lawrence M. Donaghey Building, Little Rock, FR 4-5158

RANDOLPH COUNTY

Baltz, M. A. 210 West Broadway, Pocahontas, TW 2-3111
Barre, Hal S. 309 West Broadway, Pocahontas, TW 2-3371
DeClerk, T. B. 204 Craft, Pocahontas, TW 2-3344
Hamil, W. E. Simpson Bldg., Pocahontas, TW 2-5815
Scott, William W. 309 West Broadway, Pocahontas, TW 2-3371
Smith, Norman K. 108 Van Bibber, Pocahontas, TW 2-3389

SALINE COUNTY

Ashby, John W. 302 West South, Benton, SP 8-4511
Baber, Quin M. 212 West Sevier, Benton, SP 8-3844
Bethel, James C. 221 West Sevier, Benton, SP 8-3384
Blakely, M. M. 319 West South, Benton, SP 8-2906
Buffington, T. E. Buffington Building, Benton, SP 8-2006
Flora, Wayne W. Box 123, Alexander, VI 7-3978
Hogue, F. Paul 302 West South, Benton, SP 8-4511
Hood, Robert H. State Hospital, Benton, SP 8-2572
Jones, Curtis W., Jr. 223 South Market, Benton, SP 8-2722
Jones, Curtis W., Sr. 223 South Market, Benton, SP 8-2722
Jones, Robert E. 225 South Market, Benton, SP 8-3608
Loveless, Donald E. Carpenter Street, Benton, SP 8-8264
Martindale, J. L. 321 Short, Benton, SP 8-7422
Reynolds, M. Wayne Columbia, Missouri
Thorn, H. B., Jr. 302 West South, Benton, SP 8-4511
Walton, Charles R. Montgomery, Alabama
Wright, John D. 321 Short, Benton, SP 8-7422

SCOTT COUNTY

Brown, E. J. Mansfield, 928-4848
Jenkins, James A. Waldron, ME 7-6781
Wright, Harold B. Waldron, ME 7-6311

SEARCY COUNTY

Hall, H. J. Clinton, 745-2122
Hall, J. A. Clinton, 745-2111
Williams, John H. Marshall, 448-2454

SEBASTIAN COUNTY

Adams, W. F. 100 South 14th, Fort Smith, SU 3-1183
Allen, George W. 320 North Greenwood, Fort Smith, SU 2-3001
Amis, J. W. 602 Garrison, Fort Smith, SU 2-9869
Bailey, Charles W. P. O. Box 428, Greenwood, 4171
Barta, Lloyd L. 922 Lexington, Fort Smith, SU 5-1447
Bost, Roger B. 1400 South D, Fort Smith, SU 3-0211
Boulden, Cecil F., Jr. 100 South 14th, Fort Smith, SU 3-1183
Bradford, A. C. 100 South 14th, Fort Smith, SU 3-1183
Brooksher, W. R. Station A, Box 1299, Fort Smith, SU 3-4803
Brown, Byron L. 300 North Greenwood, Fort Smith, SU 3-0225
Chamberlain, C. T. 1500 Dodson, Fort Smith, SU 2-4092
Chamblin, Don W. 1500 Dodson, Fort Smith, SU 2-4092
Coffman, Edwin L. 1500 Dodson, Fort Smith, SU 2-4092
Crigler, Ralph E. 1500 Dodson, Fort Smith, SU 2-4092
Crow, Neil E. 1500 Dodson, Fort Smith, SU 2-4092
Darnall, Harley C. 500 Lexington, Fort Smith, SU 2-8667
Davison, Augustus M. 708 Lexington, Fort Smith, SU 2-1081
Downs, Ralph A. 522 South 16th, Fort Smith, SU 3-3146
Faier, S. Z. 1500 Dodson, Fort Smith, SU 2-4092
Feild, T. A., III 3911 North O, Fort Smith, SU 3-5158
Floyd, Charles H. 818 Lexington, Fort Smith, SU 3-3166
Foltz, Thomas P. 500 Lexington, Fort Smith, SU 2-4051
Foster, M. E. 807 South 25th, Fort Smith, SU 3-8053
Glenn, Clarence L. 1500 Dodson, Fort Smith, SU 2-4092
Goldstein, D. W. 100 South 14th, Fort Smith, SU 3-1183
Goodman, R. C., Sr. 1500 Dodson, Fort Smith, SU 2-4092
Hall, Charles W. Main Street, Greenwood, 2361
Hathcock, Alfred B. 1500 Dodson, Fort Smith, SU 2-4092
Hawkins, Wright 100 South 14th, Fort Smith, SU 3-1183
*Heffington, Claud S. Fort Smith
Henry, L. Murphey 602 Garrison, Fort Smith, SU 2-7261
Henry, Louise M. 602 Garrison, Fort Smith, SU 2-7261
Hewett, Archie L. 522 South 16th, Fort Smith, SU 3-3146
Hoge, Arthur F., Jr. 310 North Greenwood, Fort Smith, SU 5-2661
Hoge, Marlin B. 314 North Greenwood, Fort Smith, SU 2-4066
Hornberger, E. Z. 404 South 16th, Fort Smith, SU 3-3159
Keck, H. M. 1605 Dodson, Fort Smith, SU 3-1300
Kelsey, J. F. 500 Lexington, Fort Smith, SU 5-2411
Kirkpatrick, Hoyt, Jr. 1500 Dodson, Fort Smith, SU 2-4092
Klopfenstein, Keith 1500 Dodson, Fort Smith, SU 2-4092
Knight, W. E. 1500 Dodson, Fort Smith, SU 2-4092
Koenig, A. S. 922 Lexington, Fort Smith, SU 5-1447
Kramer, Ralph G. 603 Lexington, Fort Smith, SU 3-8917
Krock, F. H. 1500 Dodson, Fort Smith, SU 2-4092
Kutait, Kemal 1610 South 8, Fort Smith, SU 5-2655
Lambiotte, Louis O. 1500 Dodson, Fort Smith, SU 2-4092
Landrum, Annette V. 922 Lexington, Fort Smith, SU 5-1447

Lane, Charles S., Jr. 1214 North B, Fort Smith, SU 2-6019
LeBlanc, J. V. 100 South 14th, Fort Smith, SU 3-1183
Lewing, Hugh 404 South 16th, Fort Smith, SU 3-3159
Lockhart, William G. 1500 Dodson, Fort Smith, SU 2-4092
Lockwood, Franklin M. 1500 Dodson, Fort Smith, SU 2-4092
McCraney, H. C. 217 Lexington, Fort Smith, SU 3-0297
McDonald, H. P. 2044 North 29th, Fort Smith, SU 2-4833
McEwen, Stanley R. 1214 North B, Fort Smith, SU 2-6019
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Martin, Art B. 1500 Dodson, Fort Smith, SU 2-4092
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Mason, Roy 2413 Midland, Fort Smith, SU 3-0285
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Mendelsohn, Ernest A. 1500 Dodson, Fort Smith, SU 2-4092
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Olson, John D. 1500 Dodson, Fort Smith, SU 2-4092
Patton, Gerald K. 100 North 16th, Fort Smith, SU 2-5063
Pence, Eldon D. 320 North Greenwood, Fort Smith, SU 2-3001
Phillips, William P. 500 Lexington, Fort Smith, SU 5-2411
Pope, Lewis E. 522 South 16th, Fort Smith, SU 3-3146
Post, James M. 818 Lexington, Fort Smith, SU 3-3166
ReMine, Phillip Gordon 1318 North B, Fort Smith, SU 2-5491
Rogers, Paul L. Station A, Box 1299, Fort Smith, SU 3-4803
Saviers, Boyd M. 1500 Dodson, Fort Smith, SU 2-4092
Schirmer, Roy E. 1420 South I, Fort Smith, SU 2-2983
Scott, M. H. 602 Garrison, Fort Smith, SU 3-8653
Shearer, F. E. 1500 Dodson, Fort Smith, SU 2-4092
Sherman, Robert L. 500 Lexington, Fort Smith, SU 5-2411
Shermer, J. P. 623 South 21st, Fort Smith, SU 3-1520
Shippey, W. L. 612 South 24th, Fort Smith, SU 3-7227
Sims, Henry M. 608 North Greenwood, Fort Smith, SU 3-4303
Snider, James R. 1500 Dodson, Fort Smith, SU 2-4092
Stanton, William B. 300 North Greenwood, Fort Smith, SU 3-0225
Stevenson, J. Eugene 2229 South Z, Fort Smith, SU 3-8408
Stewart, J. B. 603 Lexington, Fort Smith, SU 3-8917
Thompson, James B. 605 Lexington, Fort Smith, SU 2-6081
Thompson, John Kenneth 100 South 14th, Fort Smith, SU 3-1183
Thompson, Robert J. 605 Lexington, Fort Smith, SU 2-6081
Turner, William F. 1500 Dodson, Fort Smith, SU 2-4092
Watts, John C., Jr. 1400 South D, Fort Smith, SU 3-0211
Westerman, Norman F. 21 Mockingbird Lane, Fort Smith, MI 6-1024
Whittaker, L. A., Jr. 621 South 21st, Fort Smith, SU 3-5231
Wideman, John W. 300 North Greenwood, Fort Smith, SU 3-0225
Williams, Carl L. 500 Lexington, Fort Smith, SU 2-8667
Wilson, Carl L. 1500 Dodson, Fort Smith, SU 2-4092
Wilson, Morton C. 1500 Dodson, Fort Smith, SU 2-4092
Wilson, Ralph C. Station A, Box 1299, Fort Smith, SU 3-4803
Woods, William Merle Box 246, Huntington, ME 1-4351

SEVIER COUNTY

Daniel, Frank DeQueen Clinic, DeQueen, JU 4-2022
Dickinson, R. C. 302 North 4th, DeQueen, JU 4-2344
Dickinson, Richard B. 302 North 4th, DeQueen, JU 4-2344
Dickinson, Rodger C. 302 North 4th, DeQueen, JU 4-2344
Goodin, Walker D. 4th and Heynecker, DeQueen, JU 4-2344
*Hendricks, John S. Hot Springs
Jones, Charles N. 421 West Gilson, DeQueen, JU 4-2022
Joseph, Eugene A. Medical Arts Bldg., Walnut Ridge, TU 4-3211
Kimball, G. L. Daisy, 398-2077
Pullen, Wayne G. 421 West Gilson, DeQueen, JU 4-2022

ST. FRANCIS COUNTY

Baird, H. M. 317 No. Washington, Forrest City, ME 3-5943
Barr, Austin F. 1106 North Washington, Forrest City, ME 3-4542
Bradley, Adron M. P. O. Box 70, Forrest City, ME 3-1243
Chaffin, E. J. P. O. Box 667, Hughes, ED 9-2914
Coqburn, H. N. P. O. Box 787, Forrest City, ME 3-1425
Collins, E. M., Jr. Forrest City Clinic, Forrest City, ME 3-1952
Crawley, C. E. P. O. Box 787, Forrest City, ME 3-1425
Cuonzo, Richard A. Parsons, West Virginia
Hayden, William F. 1740 Lindauer Rd., Forrest City, ME 3-1243
Hollis, Herbert H. 317 No. Washington, Forrest City, ME 3-4209
Laney, John Neal 219 No. Rosser, Forrest City, ME 3-2245
McPhail, George T. 1801 Lindauer Rd., Forrest City, ME 3-1952
Roy, J. Max 123 North Izard, Forrest City, ME 3-4133
Sexton, Giles A. 219 North Rosser, Forrest City, ME 3-2245

UNION COUNTY

Baker, A. J. 111 West Peach, El Dorado, UN 3-5425
Barnes, Charles H. 430 S. W. Avenue, El Dorado, UN 3-7163
Burton, George C. 427 West Oak, El Dorado, UN 3-9173
Cathey, A. D. 112 West Peach, El Dorado, UN 3-4127
Clark, James F. 524 West Faulkner, El Dorado, UN 3-4267
Clowney, A. R. 312 Thompson, El Dorado, UN 3-4101
Cook, Fred F. Strong Clinic, Strong, SY 7-7332
Cooper, James O. 514 West Faulkner, El Dorado, UN 2-4994
Cullins, John G. 722 West Narroway, Benton, SP 8-3543
Cyphers, C. D. 519 West Faulkner, El Dorado, UN 2-3471
Doren, Austin H. Smackover, PA 5-3381
Dunn, Tom L. Hampton, SW 8-2525
Duzan, Kenneth R. 443 West Oak, El Dorado, UN 2-1351
Ellis, Jacob P. 430 S. W. Avenue, El Dorado, UN 3-7163
Fincher, L. G., Sr. 427 West Oak, El Dorado, UN 3-4175
Fitch, L. E. 445 West Oak, El Dorado, UN 3-7217
Harper, J. W. 425 West Oak, El Dorado, UN 3-5135
Hartmann, Ernest R. 504 West Faulkner, El Dorado, UN 3-5146
Henley, Paul G. 700 West Faulkner, El Dorado, UN 3-9542
Hill, Grady E., Jr. 528 West Faulkner, El Dorado, UN 3-7154
Irby, Frank L. 316 Schuler Building, El Dorado, UN 3-7600
Jameson, Sam G. 700 West Faulkner, El Dorado, UN 2-1377
Jones, R. J. Smackover, NF
*Kennedy, Charles E. Smackover
Kitchen, Delmas K. Chattanooga, Tennessee
Landers, G. H. 318 Thompson, El Dorado, UN 2-4216
Lewis, Ronald M. 1201 West 7th, El Dorado, UN 2-3313
McKinney, J. S. 514 West Faulkner, El Dorado, UN 2-4994
Mayfield, Hugh J. 427 West Oak, El Dorado, UN 3-7430
Moore, Berry L., Jr. 108½ N. Washington, El Dorado, UN 3-4185
Moore, Berry L., Sr. 108½ N. Washington, El Dorado, UN 3-4185
Moore, Gene D. 424 Bruno Road, Little Rock, NF
Munn, E. J. 314 Armstrong Bldg., El Dorado, UN 3-5731
Murphy, Garland D., Jr. 304 East Peach, El Dorado, UN 3-7128
Murphy, Garland D., Sr. 304 East Peach, El Dorado, UN 3-7128
Murphy, Henry A. 403 West Oak, El Dorado, UN 3-3866
Murphy, Randolph Albert Pike Hotel, Little Rock, NF
Newton, William L. Smackover, PA 5-3601
Pinson, J. H., Jr. 312 Thompson, El Dorado, UN 3-4101
Rainwater, W. S. 306 Thompson, El Dorado, UN 3-6157
Riley, Warren S. 526 West Faulkner, El Dorado, UN 3-4508
Rogers, Henry B. 514 West Faulkner, El Dorado, UN 2-4994
Sheppard, Jack M. 528 West Faulkner, El Dorado, UN 3-7154
*Sheppard, Julius K. El Dorado
Stevens, Willis M., Jr. 516 West Faulkner, El Dorado, UN 2-4937
Thibault, Frank G. 430 South West Ave., El Dorado, UN 3-7163
Tommey, Charles E. 412 North Washington, El Dorado, UN 2-3411
Turnbow, R. L. 306 Thompson, El Dorado, UN 3-6157
Warren, G. W. Smackover, PA 5-3471
Wharton, Joe B., Jr. 516 West Faulkner, El Dorado, UN 2-4221
White, D. E. Armstrong Building, El Dorado, UN 3-3712
Wilson, Larkin M., Jr. 430 Southwest Ave., El Dorado, UN 3-7163
Yocum, David M., Jr. 412 No. Washington, El Dorado, UN 2-3411

WASHINGTON COUNTY

Applegate, Stanley Springdale Clinic, Springdale, PL 1-4637
Arnold, Sidney W. 4301 West Markham, Little Rock, MO 6-9461
Baggett, Jeff J. Mock Clinic, Prairie Grove, VI 6-2321
Baker, Charles R. 22 East Spring, Fayetteville, HI 3-3417
Baker, Donald B. 241 West Spring, Fayetteville, HI 2-6256
Box, Ivan H. Box 143, Huntsville, RE 8-2115
Boyce, John M. Mock Clinic, Prairie Grove, VI 6-2321
Boyer, H. L. North Starr Street, Lincoln, 824-3203
Brandon, H. B. Evelyn Hills Shopg. Ctr., Fayetteville, HI 2-5262
Brightwell, Richard J. 801 Peel, Fayetteville, HI 3-4822
Brizzolara, Chas. M. 5512 S. Grandview Rd., Little Rock, MO 6-5977
Brown, Spencer H. 106½ West Center, Fayetteville, HI 2-7309
Buckley, Carie Dan 241 West Spring, Fayetteville, HI 2-6256
Buice, James W. Washington Gen. Hosp., Fayetteville, HI 2-8211
Burnside, Wade W., Jr. 207 East Dickson, Fayetteville, HI 3-3471
*Butler, George Harrison Fayetteville
Butt, W. J. University of Ark. Infirmary, Fayetteville, HI 3-4511
Clark, LeMon 241 West Spring, Fayetteville, HI 2-6256
DeLaney, Joseph P. Gainesville, Florida
DePalma, Anthony T. 218 South School, Fayetteville, HI 2-2002
Dodson, Charles D. 1031 North College, Fayetteville, HI 2-7521
Dorman, John W. Springdale Clinic, Springdale, PL 1-4637
Edmondson, Chas. T. Quandt & Young Sts., Springdale, PL 1-9236
Edmondson, Rogers P. Quandt & Young Sts., Springdale, PL 1-9236
Finch, Stephen B. 617½ No. College, Fayetteville, HI 3-3491
Fowler, W. A. 301 West Mountain, Fayetteville, HI 2-5412
Fowler, W. Gerald DeWitt, Nebraska
Gardner, Buford M. East Highway 16, Fayetteville, HI 3-3071
Gilbert, Allan A. 39 East Center, Fayetteville, HI 2-4761
Graham, Ronald A. East Highway 16, Fayetteville, HI 3-3071
Gray, Thomas W. V. A. Hospital, Fayetteville, HI 3-2301
Greenhaw, James J. 1217 So. Thompson, Springdale, PL 1-5091
Hall, Joe Bill 675 Lollar Lane, Fayetteville, HI 2-5386
Hathcock, P. L. W. Dickson & Block, Fayetteville, HI 2-7333
Hathcock, Loyce W. Dickson & Block, Fayetteville, HI 2-7333
Henry, Morriss M. 35 North Block, Fayetteville, HI 2-5227
Kaylor, Coy C. 1673 North College, Fayetteville, HI 2-4482
Lawson, Wilbur G. 207 East Dickson, Fayetteville, HI 3-3471
Leming, Howell P. O. Box 63, Fayetteville, HI 2-7291
Lesh, Ruth E. 221 North College, Fayetteville, HI 3-2343
Lesh, Vincent O. U. of Ark. Infirmary, Fayetteville, HI 3-2343
McAllister, Max F. 18 East Dickson, Fayetteville, HI 2-4011
McCutcheon, F. B. Evelyn Hills Shop. Ctr., Fayetteville, HI 3-4385
Martin, Harold E. Sisco Clinic, Springdale, PL 1-4579
Mashburn, James D. 207 East Dickson, Fayetteville, HI 2-5377
Mock, William H. Mock Clinic, Prairie Grove, VI 6-2321
Moore, Arthur 675 Lollar Lane, Fayetteville, HI 2-5386
Murry, John Warren 1749 No. College, Fayetteville, HI 2-9312
Nettleship, Anderson Box 35, Fayetteville, HI 3-3050
Nettleship, Mae B. Box 35, Fayetteville, HI 3-3050
Ogden, Fred W. Cravens Building, Fayetteville, HI 2-7161
Parker, Joe C. 130 North Spring, Springdale, PL 1-5704
Patrick, James K. 241 West Spring, Fayetteville, HI 2-6256
Power, John R. Springdale Clinic, Springdale, PL 1-4637
Rabon, Nancy A. P. O. Box 656, Fayetteville, HI 2-8261
Siegel, Lawrence H. 1031 North College, Fayetteville, HI 2-4471
Sisco, Friedman 101 South Shilo Street, Springdale, PL 1-4579
Smith, Austin C. P. O. Box 248, Huntsville, RE 8-2115
Stocker, W. J. Block & Dickson, Fayetteville, HI 2-5111
Vinzant, John W. 22 East Spring, Fayetteville, HI 3-3417
Ward, Herbert W. Washington Hosp., Fayetteville, HI 2-8211
Wheat, Ed 130 Spring, Springdale, PL 1-5704
Wozencraft, W. L. 310 North Fletcher, Fayetteville, HI 2-5526

WHITE COUNTY

Abington, Eugene H. Beebe, TA 8-5455
Adair, Thomas Lester Bald Knob, PA 4-3220
*Allbright, Sam J. Searcy
Arrington, Thell S. Birmingham, Alabama
Bridges, Olen W. 1205 East Race, Searcy, CH 5-4958
Brown, A. R. York, Nebraska
Dodd, William Carroll Bald Knob, PA 4-3240
Dunklin, A. J. 103 North Hickory, Searcy, CH 5-2191
Edwards, Hugh R. 607 Woodruff, Searcy, CH 5-5811
Formby, Thomas A. 910 East Race, Searcy, CH 5-3566
Gardner, Jack R. Searcy Clinic, Searcy, CH 5-3566
Hawkins, M. C., Jr. 403 East Lincoln, Searcy, CH 5-2441
Hudgins, Albert H. 120 East Arch, Searcy, CH 5-5561
Jackson, C. W. Judsonia, RA 9-3435
Kinley, James D. Beebe, TA 8-3388

Kinley, J. Garrett Beebe, TA B-3388
Leonard, Lonnie F. 120S East Race, Searcy, CH 5-49S8
Mattox, William J. 910 East Race, Searcy, CH 5-3S66
Paine, C. H., Jr. 910 East Race, Searcy, CH 5-3566
Rodgers, Porter R. 607 Woodruff, Searcy, CH 5-5B11
Sanford, Sloan M. 703 No. Spruce, Searcy, CH 5-4930
Short, Harold 501 North Main, Beebe, TA B-5561
Sloan, Dewey W. 130 West Center, Beebe, TA B-5472
Smith, Bernard C. Bradford, SI1

WOODRUFF COUNTY

Dungan, C. E. 101 North 3rd, Augusta, 347-2481
Ferrari, Victor J. U. S. Air Force
Hendrixson, Basil E. Third and Johnson, McCrory, 731-2511
Inman, Fred C., Jr. Court Street, Carlisle, LU 2-2596
Maguire, Frank C., Jr. 200 South 4th, Augusta, 347-2165
Maguire, Frank C., Sr. 200 South 4th, Augusta, 347-2346
Millwee, Fay B. Box 248, McCrory, 731-2722
Morris, John W. McCrory, 731-2631
Rowe, James E. Third and Johnson, McCrory, 731-2552
*Williams, W. J. B. Cotton Plant

*Deceased
NF—no phone

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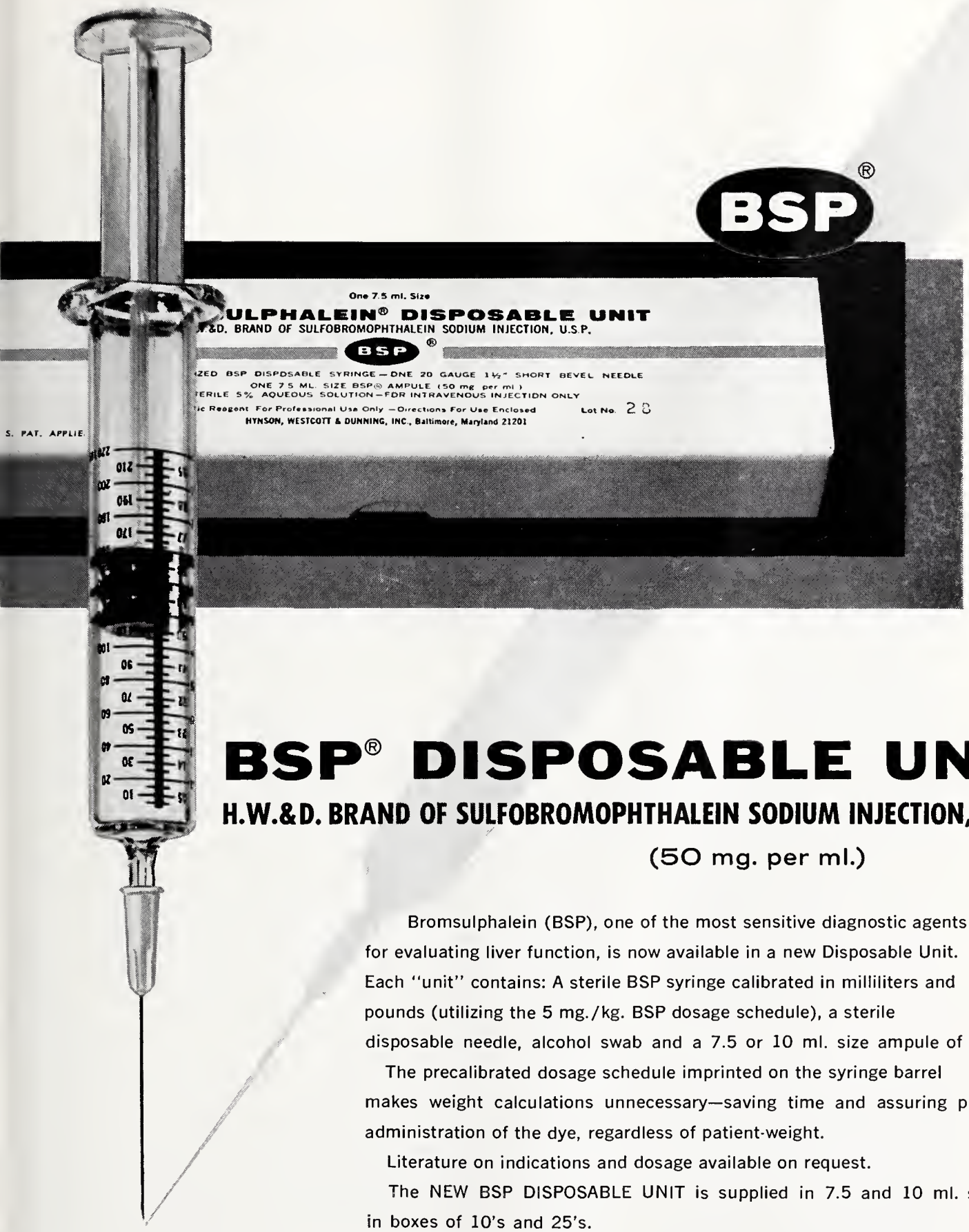
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*Roseman, E.: *Neurology* **11**:912, 1961. 33664

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Personal Experience with Stapedectomies*

H. A. T. Bailey, Jr., M.D.,** James J. Pappas, M.D.,** Frederick N. Martin, M.A.**

Surgical treatment of hearing loss produced by otosclerosis has long held the attention of the otologic surgeon. Successful modern management of otosclerosis was initially accomplished by Dr. Julius Lempert when he developed his one stage fenestration operation of the horizontal semi-circular canal. This was first reported in 1938[1] and received wide spread acceptance.

In 1953, while checking the degree of stapes fixation on a patient during the performance of a fenestration procedure, Dr. Samuel Rosen of New York City suddenly mobilized the patient's stapes, resulting in immediate hearing improvement. This chance occurrence led Dr. Rosen to revive and redevelop the stapes mobilization procedure[2] which had been abandoned around the turn of this century.

The modern stapes mobilization operation was rapidly adopted by otologic surgeons around the world as it presented a number of advantages over the fenestration operation. The fenestration procedure required two to three weeks hospitalization in contrast to the mobilization which required only two to three days. The stapes mobilization was performed entirely through the ear canal and therefore did not create a mastoid cavity as was necessary in the fenestration operation. The hearing level by stapes mobilization could be returned to the full capacity of the patient's hearing nerve, unlike the fenestration operation which always resulted in only partial restoration of hearing. The remaining conductive deficit following the fenestration operation was due to the loss of the sound conducting mechanism of the middle ear, as a new pathway for sound was created via the horizontal semi-circular canal. The mobilization operation utilized the natural pathway for sound through the ossicular chain and thus completely eliminated the conductive deficit. The stapes mobilization procedure was accomplished by fracturing through the pathology which originally fixed the stapes. Further activity of the pathology resulted in frequent re-fixation of the stapes, weeks, months or years following surgery. As a result less than 30% of the initially good results were maintained after three years.

Because regression of hearing is concomitant with re-fixation of the stapes following mobilization, it was only natural that the next step in the rapidly developing field of stapes surgery was the complete removal of the stapes to prevent it's re-fixation. Dr. John Shea in 1957[3] introduced a successful modern technique for stapedectomy using the same stapes transcanal approach as was used in the mobilization operation. This procedure was performed with magnification provided by the Zeiss operating microscope. A small vein graft taken from the patient's hand was used to cover the open oval window after the stapes footplate and superstructure were removed. A polyethylene prosthesis was used to replace the removed stapes and it extended from the lenticular process of the incus down onto the center of the newly placed vein graft covering the oval window.

Following the original publication by Shea in 1958 a number of similar stapedectomy techniques evolved rapidly. Most notable of these were Schuknecht's wire-fat graft.[4] Kos's wire-vein plug,[5] House's Polyethylene-gelfoam[6] and later prefabricated wire loop-gelfoam,[7] Portmann's interposition,[8] Hough's partial stapedectomy[9] and Shea's teflon piston[10] which was soon modified by many as a wire-teflon piston prosthesis.

As of April 1964 one of us (H.A.T.B.) has performed 897 stapedectomies. 503 were performed utilizing polyethylene-vein, nine with wire-fat, 30 with teflon piston or the wire-teflon piston, 95 with the prefabricated wire loop-gelfoam and 47

*Presented at 88th Annual Session, Arkansas Medical Society, Hot Springs, Arkansas, May 5, 1964.

**1610 West Third, Little Rock, Arkansas

by re-positioning part of the patient's stapes on gelfoam as a natural prosthesis.

The purpose of this paper is to discuss the current stapedectomy techniques which we are now using and an appraisal of the advantages and disadvantages as well as the results with each of the techniques.

Our initial steps in the performance of a stapedectomy are practically identical in each of the techniques. The ear is first prepared using a mixture of alcohol and ether following by cleansing with septisol. Following this the ear is anesthetized with a local anesthetic consisting of a mixture of 2% xylocaine with 1:1000 adrenalin. The classical stapes triangular incision is made in the posterior canal wall and the skin flap and drum are elevated exposing the middle ear space. The stapes footplate is checked to ascertain it's degree of fixation and the extent of the otosclerotic pathology is noted. The initial step in removing the stapes is to make a rent in the mucous membrane just anterior to the anterior crus as this area is usually quite vascular. (See Fig. 1) The incudostapedial joint is separated and the stapedius muscle is severed. A small opening is then

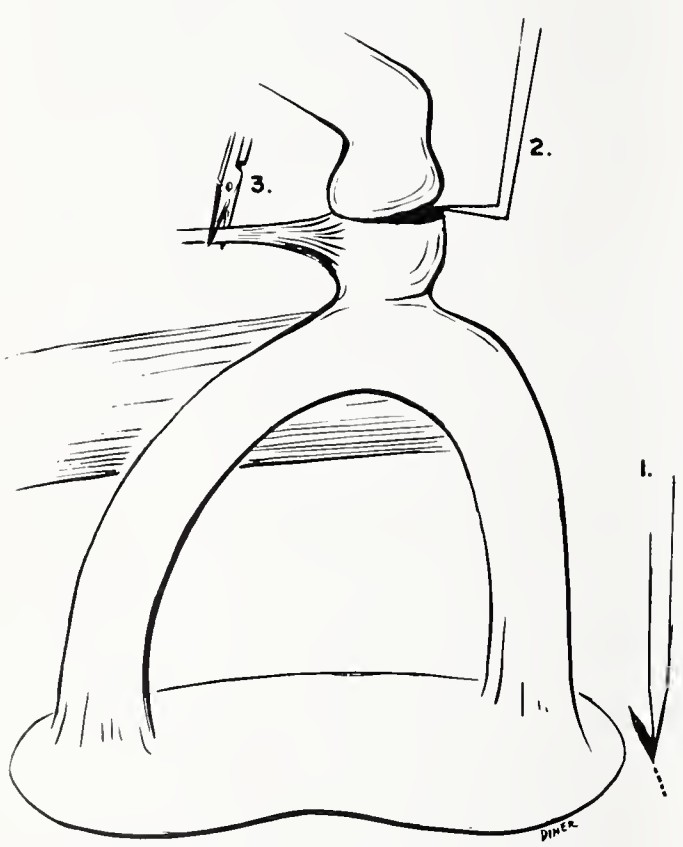


FIGURE 1

Step 1, Rent in mucous membrane anterior to anterior crus; Step 2, separation of incudostapedial joint; Step 3, severing of stapedius muscle.

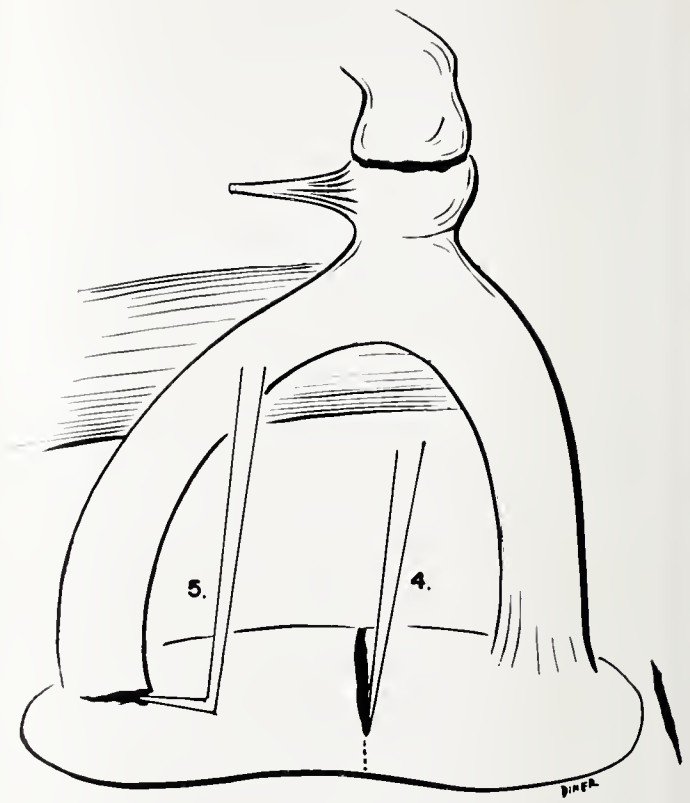


FIGURE 2

Step 4, Opening being made in the center of the fixed footplate; Step 5, fracturing of posterior crus.

made in the center of the fixed footplate in order to avoid the complication of a floating footplate. The posterior crus is fractured as nearly as possible at its junction with the footplate by

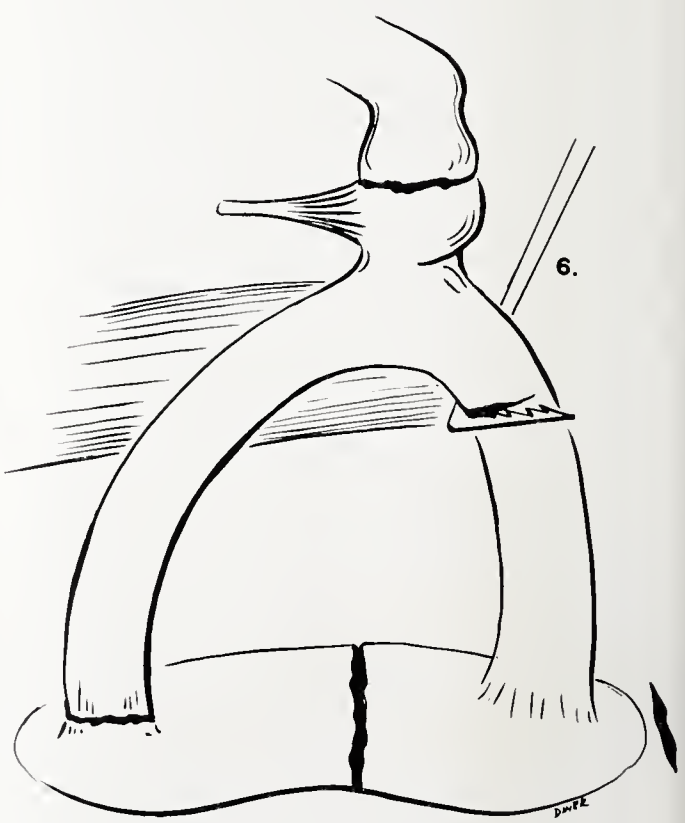


FIGURE 3

Step 6, Anterior crus cut beneath stapedial arch.

use of a posterior right angle fenestra hook. (See Fig. 2) The anterior crus is cut just beneath the arch of the stapes using a right angle saw. (See Fig. 3) The superstructure of the stapes with its mucous membrane covering is removed from the ear. (See Fig. 4) The small opening in the center of the footplate is extended vertically using a small pick to complete the cut across the footplate thus dividing it into two fragments. Using right angle fenestra hooks, the anterior and posterior fragments are removed exposing the perilymph in the vestibule. (See Fig. 5) A piece of compressed gelfoam 5x5 millimeters is placed in position over the open oval window to act as a temporary seal for the vestibule. If a satisfactory portion of the stapes is saved, ideally it is repositioned as a natural prosthesis under the lenticular process of the incus setting on the compressed gelfoam in the center of the oval window. (See Fig. 6) Should the remaining stapes remnant be unsatisfactory for repositioning we now resort to use of either the prefabricated wire loop prosthesis on compressed gelfoam (See Fig. 7) or the wire-teflon piston prosthesis. Gelfoam is packed around the base of the piston which extends 0.25

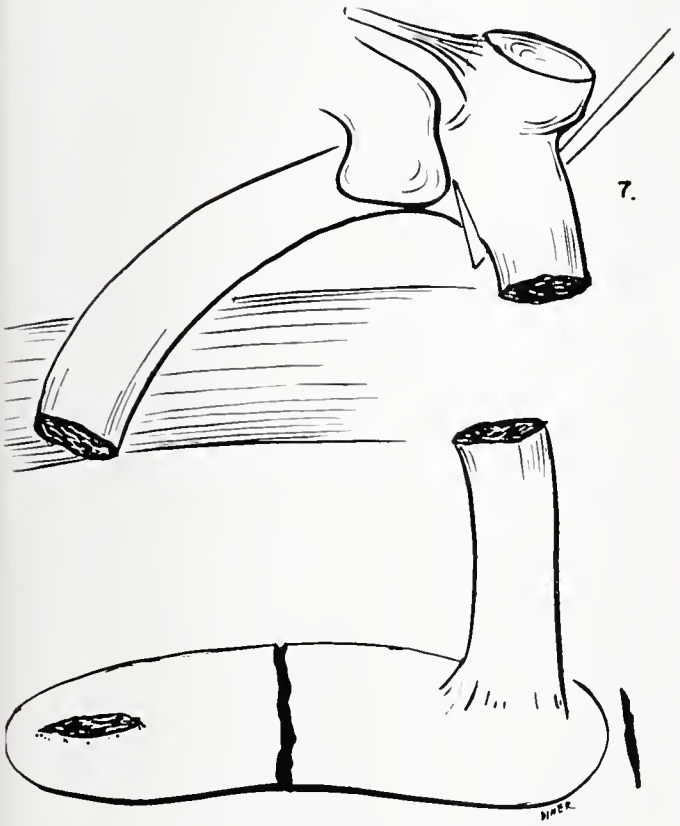


FIGURE 4
Step 7, Stapedial superstructure removed.



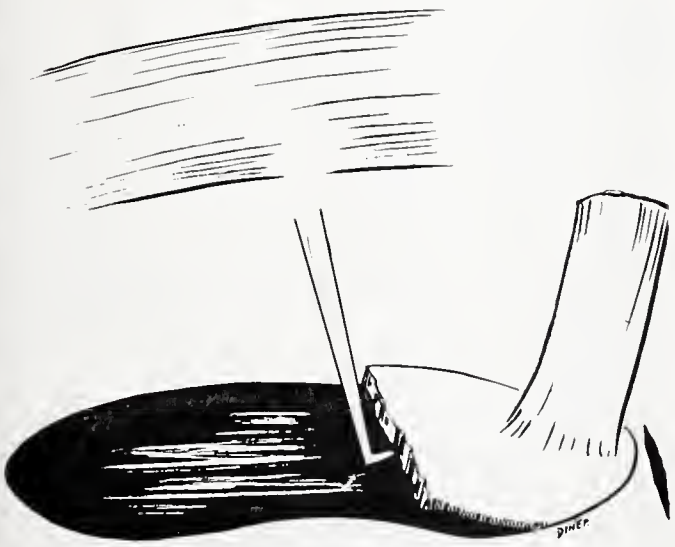


FIGURE 5
Step 8, Anterior fragments of stapes lifted from oval window.

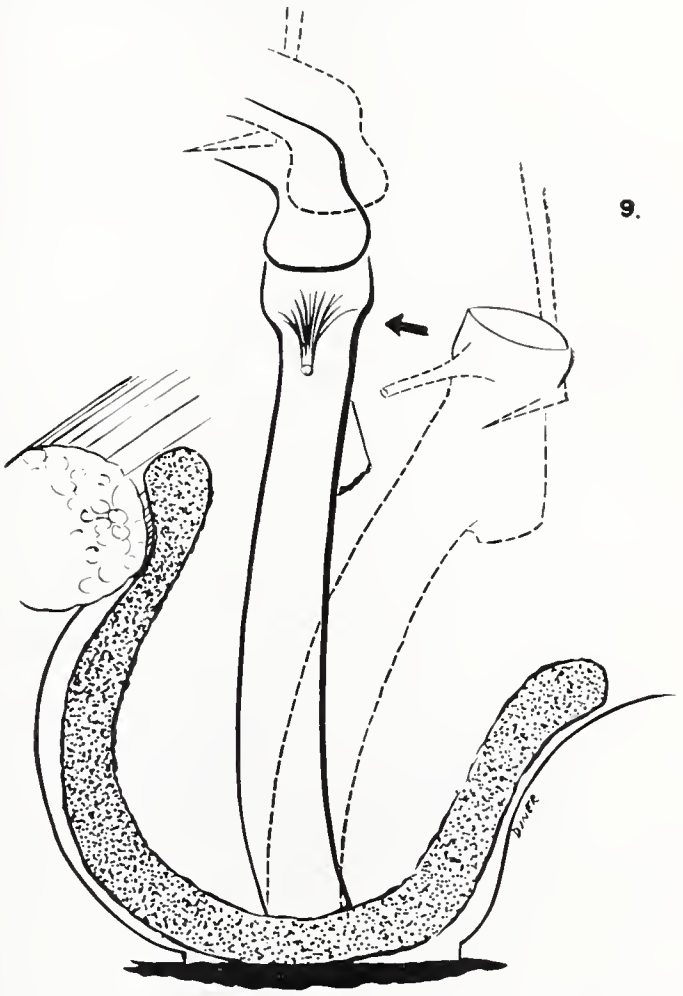


FIGURE 6
Step 9, Stapes repositioned between incus and compressed gelfoam as a natural prosthesis.

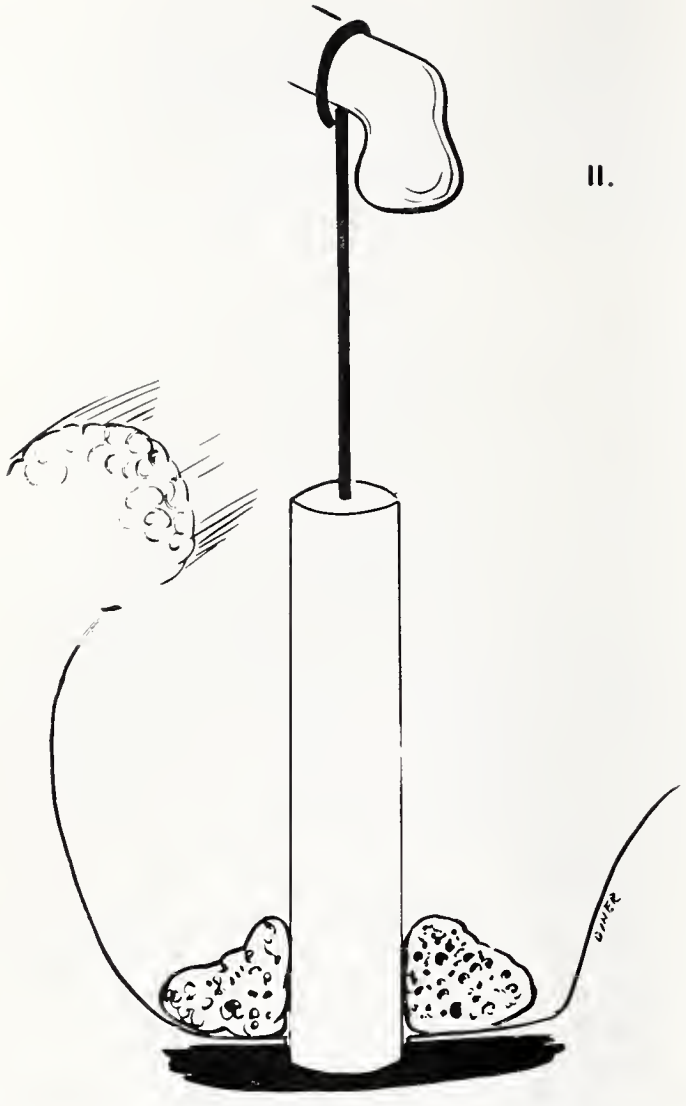


FIGURE 7
Step 10. Wire-loop prosthesis in position from incus to compressed gelfoam.

millimeters into the vestibule through an opening in the footplate. (See Fig. 8) Both of these prostheses are held in place by crimping the top of them onto the long process of the incus. Following the placement of the chosen prosthesis the drum and canal skin flap are returned to the original position and are then covered with a triangular shaped wedge of compressed gelfoam soaked in adrenalin. The gelfoam wedge is the only form of packing in the ear canal. A routine external mastoid dressing is applied and left in place for 24 hours.

At the second workshop on Reconstructive Middle Ear Surgery in Feb. 1963 Dr. Howard P. House of Los Angeles reported only a 0.6% incidence of post operative cochlear damage in 1,000 cases in which he had used a prefabricated wire loop prosthesis with compressed gelfoam covering the oval window. He postulated that his low incidence of cochlear damage might well be due to his use of gelfoam instead of tissue grafts as the seal for the oval window. Gelfoam is absorbed and replaced by a thin fibrous membrane in contrast to the thick membrane which develops with the use of tissue grafts. This thin membrane developing with the use of gelfoam further enhances the patient's ability to hear as compared to his ability to hear with the thicker membrane seen in tissue grafts. Sufficient protection to the inner ear is still maintained by the thin membrane against possible future middle ear infections. For the foregoing reasons we discontinued techniques using vein and fat tissue grafts in Feb. 1963 and have since adopted those utilizing gelfoam.

Once the decision to use gelfoam was made the necessity for changing prostheses was readily apparent. In as much as gelfoam is not suitable as the only support for a prosthesis, the choice of the prosthesis had to be limited to one which could be attached to the incus for support either by crimping it onto the incus or by reunion with the lenticular process of the incus such as is seen in stapes repositioning. The prostheses which meet these criteria are the prefabricated wire loop prosthesis, the wire-teflon piston prosthesis, and

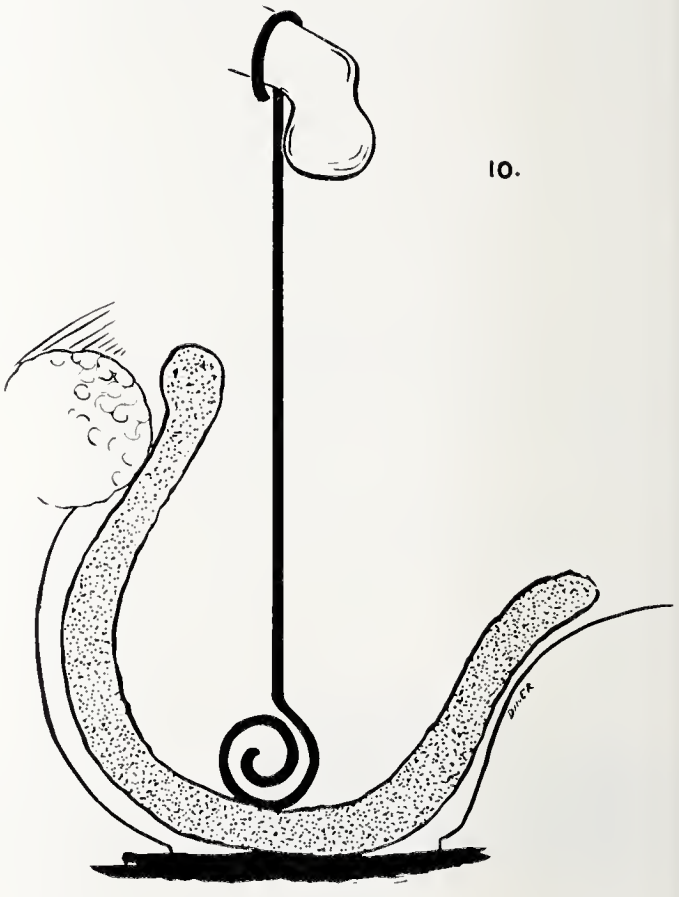


FIGURE 8
Step 11, Wire-Teflon piston prosthesis in position from incus through footplate 0.25mm into vestibule.

the natural prosthesis which is the patient's own stapes remnant.

Of the three techniques we now use we feel the ideal technique is the one using the natural prosthesis. Its main advantage is that no permanent foreign material is left in the middle ear. The compressed gelfoam which is placed over the oval window acts not only as a temporary seal for the vestibule but also as a temporary support for the natural prosthesis until such time as there is reunion of the lenticular process and the head of the stapes. In this technique we feel that it is very important that the footplate be completely removed from the repositioned stapes. In our hands, however, less than one out of every four cases presents a satisfactory stapes remnant and other conditions required to permit the use of the natural prosthesis technique.

The results obtained with the prefabricated wire loop-gelfoam technique have been so satisfactory and the technical difficulties so few in comparison with the natural prosthesis technique that this is now our technique of choice. The use of wire offers several advantages. It is firmly held in position above by crimping onto the long process of the incus. Below, the wire loop becomes securely incorporated in the developing thin fibrous membrane which safely seals the vestibule. Firm attachment of this prosthesis above and below offers excellent sound transmission from ossicles to inner ear. Wire is malleable and thus can be bent as needed to accommodate it to any anatomical variation. Its thin shaft takes full advantage of the frequent space demands of the narrow oval window niche, and reduction of sound transmission by friction is held to a minimum.

The wire-teflon piston technique has been restricted in our hands to the obliterative cases or to those cases with very thick otosclerotic footplates. The prosthesis is attached above by wire to the long process of the incus. Below, the teflon portion protrudes 0.25 millimeters into the vestibule through an opening made in the fixed footplate, and functions as a piston. Bits of gelfoam are packed around the base of the teflon piston to act as a seal for the vestibule. The main advantage of the teflon piston technique is that it can be used without removal of the entire footplate, as total removal is a great deal more traumatic in cases with obliterative or very thick footplates. Teflon is an inert plastic which is self-lubricating, and these qualities may help prevent fixation of the teflon piston prosthesis by recurring otosclerosis. Whether the inner ear is safely sealed with this technique has been a cause of particular concern. This concern accounts in large measure for our limited use of this technique.

9

CHART ONE

IBM ANALYSIS of the LAST 684 of 897 STAPEDECTOMIES

	No. Cases	Number of Patients Returning for Post Operative Examination					Air-Bone Gap Closures on Most Recent Examination				
		1 Mo.	4 Mo.	12 Mo.	24 Mo.	Did not return	Cochlear loss	No change	1-50%	51-90%	91-100%
Polyethylene-Vein	503	487	441	281	106	5	18 (3.6%)	0	24 (4.7%)	56 (11.1%)	400 (79.5%)
Wire-Fat	9	9	9	5	3	0	0	0	0	0	9 (100%)
Teflon Piston or Wire-Teflon Piston	30	30	22	0	0	0	0	0	2 (6.7%)	4 (13.3%)	24 (80%)
Prefabricated Wire-Loop Gelfoam	95	96	60	7	0	0	4 (4.2%)	1 (1.0%)	3 (3.2%)	19 (20.0%)	68 (72.5%)
Stapes-Gelfoam (Natural Prosthesis)	47	47	35	5	0	0	0	0	3 (6.4%)	3 (6.4%)	41 (87.2%)
Totals	684	669	567	298	109	5	22 (3.2%)	1 (0.01%)	32 (4.7%)	82 (12.1%)	542 (79.7%)

Since February, 1963, 172 cases have been performed using gelfoam technique. Four (2. 3%) showed cochlear loss.

All preoperative patients in our clinic undergo careful preoperative audiologic evaluation with special emphasis placed on speech discrimination and assessment of the patient's cochlear reserve. Similar postoperative examinations are carried out at one, four, twelve and twenty-four months. An IBM analysis of the last 684 cases revealed the results depicted on Chart 1.

It is our belief that while the prostheses and other materials may change in the future the principal of stapedectomy has proved itself to be an excellent means of surgical correction of hearing loss in otosclerosis and one which will remain with us for sometime to come.

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Gastric Secretion of Acid and Urinary Excretion of Histamine in Dogs with Portacaval Transposition

J. C. Rex, C. F. Code, and W. H. ReMine (Mayo Clinic, Rochester, Minn) *Ann Surg* 160:193 (Aug) 1964

The pattern of gastric secretion was studied in female dogs with portacaval transposition. Acid was found more frequently in fasting secretion. Output of acid in response to ingestion of meat and to injection of histamine was much greater in dogs with portacaval transposition. Urinary excretion of free histamine during fasting and after a meal of meat did not significantly differ from normal limits. Results indicated that increased quantities of circulating histamine were not the cause of the increased secretion of acid. Increased responsiveness of the gastric mucosa was demonstrated and is suggested as a possible cause of the hypersecretion.

Anesthesia for Stapes Surgery

J. Milowsky and A. A. Scheer (522 W End Ave, New York) *Arch Otolaryng* 80:43 (July) 1964

A historical account of the development of anesthetic techniques and agents which have been utilized for stapes surgery is presented. The advantages and disadvantages of the procedures outlined are indicated. The use of a combination of preanesthetic medication, regional field block, and dilute intravenous thiamylal solution in proper sequence for 500 consecutive unselected patients satisfied the basic criteria and prerequisites which were established. A simple, safe, controllable, and readily predictable technique for the satisfactory completion of stapedectomy surgery is outlined. This anesthesia should only be used when the surgeon is doing routine stapedectomy where the patient's immediate hearing response is unimportant.

Carcinoma of the Lip

Frederick F. Bechtold, M.D.*

The incidence of malignant lesions on the exposed parts of the body is higher in the Southern United States than any other part of the country. That the lip shares in this phenomena is understandable. The exact etiological mechanisms, like those of all malignancies, are not definitely known, however, prolonged exposure, the type of occupation of many of the inhabitants, the older age group, and some nutritional deficiencies all play at least some part in the pathogenesis.

This is a review of 109 malignancies of the lip in 105 patients treated at the Veterans Administration Hospital, Little Rock, Arkansas, during the period January 1, 1952 to January 1, 1963. Only those lesions that arose at or on the vermilion border are considered here. All of the patients in this group had a definite histological diagnosis of malignancy. Many other patients were seen with thinning epithelium, hyperkeratotic changes, and leukoplakia, but they are not included in this report.

The history of most of these patients is similar. After many years of exposure to the weather such as sun, wind, and repeated chapping, there developed a thinned area in the vermilion border, followed by the production of an excrescence. This remains for a few years, then an inflammatory-like reaction ensues, and the lesion grows with varying amounts of ulceration in the center. Usually when the patient presents himself for treatment the lesion is located about one-third on the skin side of the border and two-thirds on the mucosal side.

Distribution and Type of Lesion

The distribution and the type of lesion are shown in Chart I. It will be noted that in the 105 patients there was only one case of the upper lip involved in malignancy. There was one connective tissue tumor and three basal cell tumors; all of the remaining (105) were squamous cell carcinomas. Four patients in the group developed a second and distinct primary while under observation which accounts for 109 malignancies in 105 patients. All of the patients were males and the greater percentage (79 per cent) were over fifty years of age. A large percentage (82 per cent) of them smoked in some form.

CHART I

CARCINOMA OF THE LIP
1-1-52 to 1-1-63

109 MALIGNANCIES IN 105 PATIENTS*

SQUAMOUS CELL	BASAL CELL	SARCOMA	UPPER LIP
104	3	1	1

*Four patients had two distinct malignancies.

Treatment

In all of these patients the lesion was excised taking a full thickness of the lip with a margin of normal tissue at least one and a half centimeters in all directions. Primary reconstruction was accomplished by various modalities depending upon the size and location of the resultant defect. All patients were operated upon under local anesthesia of 1 per cent Procaine or 1 per cent Xylocaine, except for one patient who was hypersensitive to Procaine in which case general anesthesia was used. Local anesthesia has proved very satisfactory so far as relaxation and patient comfort are concerned.

CHART II

Method of Treatment	"V" Excision	Sliding Flap	Esch-lander Flap	Rotation Flap	Other
Number Treated	48	38	17	2	4
Number of Recurrences	1	2	0	0	1
Secondary Procedures	1	1	7	0	1

Chart II shows the type of excision and the frequency with which it was used. The most frequently used method was the classical "V" type of excision with primary repair. The procedure is illustrated in Figure 1. This has given satisfactory therapeutic and cosmetic results in lesions up to one and a half centimeters in diameter.

In 38 cases a sliding flap type of reconstruction was used. Figure 2 illustrates this type of treatment. It is particularly adaptable to the larger lesion. In this instance the lesion is excised in a rectangular manner taking full thickness lip down

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FIGURE I

(a) Lesion as it appeared before excision.

(b) Healed lip after "V" excision.



to the gingiva-labial sulcus, then making a releasing incision out on the face either on one side or both as needed and sliding the flaps into place to reconstruct the lip. This procedure gives a good excision of the larger lesion and a good cosmetic result.

In 17 cases the excision was accomplished with reconstruction after the method of Eschlander. Illustration of this method is seen in Figure 3. This procedure is well suited to the lesion of considerable size located near one corner of the mouth. A portion of the upper lip is mobilized and brought down by rotation to fill in the defect in the lower lip. There is one disadvantage to this method, however. If the amount of tissue brought down is large it does alter the size of the mouth necessitating a secondary procedure to reestablish the relationship of the commissure for a better and more functional mouth. This was necessary in seven of the seventeen Eschlander flaps done. One can plan these as two stage procedures which make them quite useful in certain

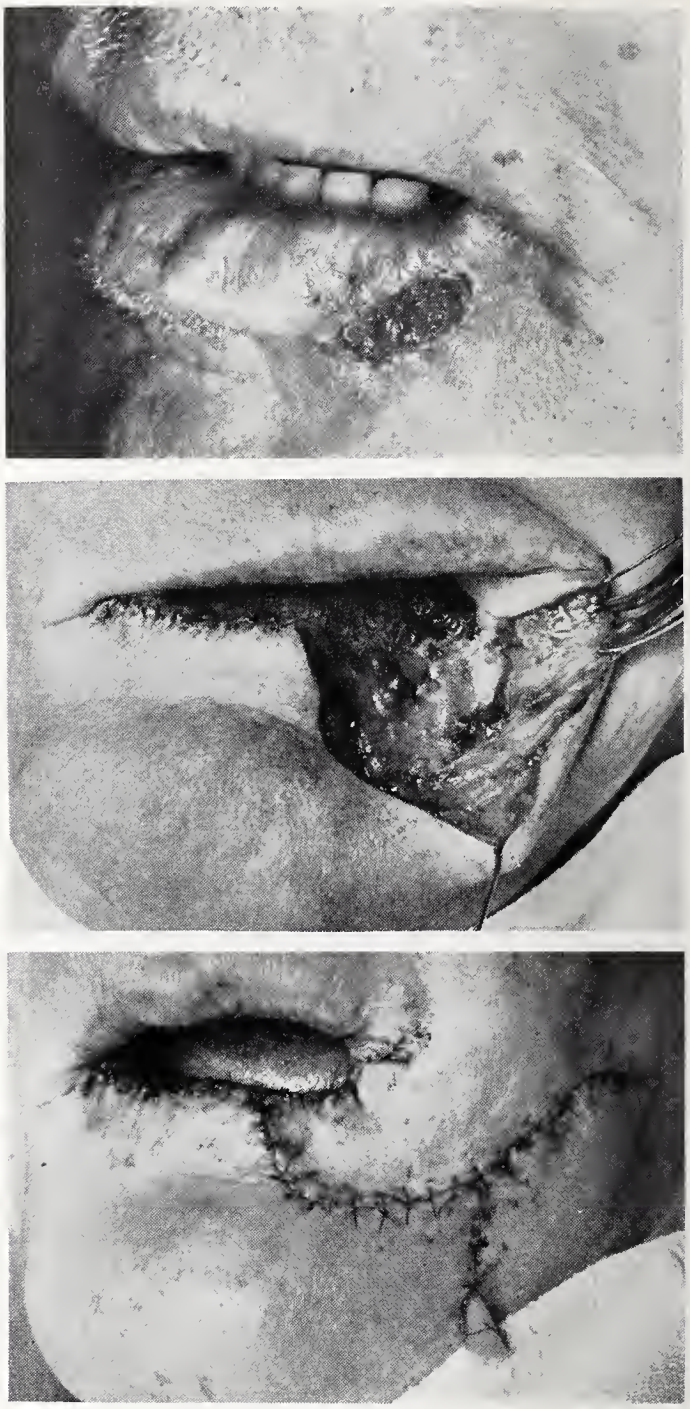


FIGURE II

Sliding flap technique:

(a) Lesion involving larger portion of lower lip.

(b) Area of rectangular excision.

(c) Reconstruction after mobilization of sliding flap.

selected cases.

Other types of reconstruction are not needed frequently and depending on needs may consist of tubed flaps of various sorts. These were only needed in two of the cases reviewed, and in two others the reconstruction was part of a more radical procedure.

Metastasis

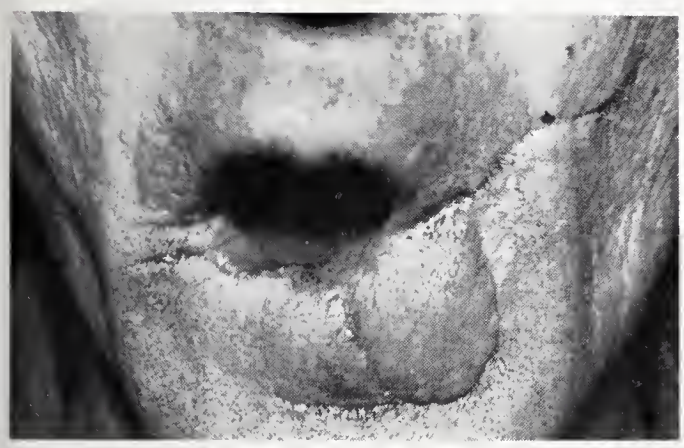
Of the 105 patients four presented with palpable, characteristic nodes in the cervical chain. These are classified in Chart III as primary neck

FIGURE III

Eschlander type reconstruction:

(a) Lesion involving left corner of mouth and lower lip.
(b) and (c) After excision of lesion and Eschlander type reconstruction.







dissections. Three of them had their primary lip lesion excised and three weeks later in the same hospitalization a radical neck dissection was done. All of these are living without evidence of tumor five or more years after operation. One patient had extensive involvement of the lip, skin of the chin, and nodes. On this patient a combined radical neck dissection and resection of the primary was done. He died of recurrence of his tumor one year following the operation.

During the follow-up there were four patients who developed palpable nodes more than six months after excision of the primary. These are classified as secondary neck dissections in Chart III. All four were operated on and all are living without evidence of tumor three to eight years after operation.

CHART III

RADICAL NECK DISSECTIONS

	Number of Cases	Number With Positive Nodes	Percentage of Patients	Living Over 5 Years
Primary (in same Hospitalization)	4	4	4	3
Secondary	4	3	4	4
Total	8	7	8	

Recurrence

There were three patients, other than the one who expired, who developed recurrences in the area of primary resection. All of these were re-excised and at present show no evidence of further recurrence.

Mortality

There were no operative deaths in either the primary resection or in the radical neck dissections. As noted above, one patient succumbed to the tumor one year after operation. In the follow-up seven patients have died of other causes as listed in Chart IV. There were three patients lost to follow-up.

CHART IV

MORTALITY*

Cause of Death	Number	Percentage
Tumor	1	1%
Myocardial Infarction	2	2%
Pulmonary Emphysema and Fibrosis	2	2%
Lung Infarction	1	1%
Auto Accident	1	1%

*All deaths occurred more than 6 months after last operation.

Discussion

As is evident from the statistics presented the primary lesion in carcinoma of the lip may be treated with good results by the use of excisional therapy. Statistically the likelihood of recurrence is small, and the cosmetic result is satisfactory.

Metastasis to the lymph nodes can also be adequately dealt with surgically.

The overall incidence of metastasis in this series is somewhat low (8 per cent). As more time elapses and these patients are followed there will undoubtedly be more metastases develop, or at least make themselves evident. It would seem that this incidence of metastasis lends further argument to the inadvisability of a so-called prophylactic neck

dissection in carcinoma of the lip, but certainly argues strongly for the meticulous and regular follow-up examination of the lymphatic drainage area in these patients. The nature of the disease is such that when palpable nodes do develop they can be removed before the malignant cells migrate to the areolar tissue of the neck where the unyielding collar of tumor finally causes the demise of the patient.

Summary

One hundred and nine malignancies involving the lips are reviewed and the statistics regarding their treatment presented.

Acute Pancreatitis: Six-Year Survey With Evaluation of Steroid Therapy

M. H. Kaplan (Louisiana State University School of Medicine, New Orleans), A. M. Cotlar, and S. J. Stagg *Amer J Surg* 108:24 (July) 1964

The records of 63 patients with acute pancreatitis were reviewed; 51 of these had acute edematous pancreatitis and 12 had hemorrhagic pancreatitis. Clinical or laboratory jaundice was found in 25 patients. Operations were performed on 17 patients (exploratory laparotomy, cholecystostomy, cholecystectomy, and common bile duct exploration). Steroids were given to 15 patients. Six of these had severe edematous pancreatitis and had failed to respond to routine therapy. Dramatic improvement was noted in all six patients after steroid treatment. Nine of the patients who were given steroids had hemorrhagic pancreatitis; of these, five died and four survived. These four were the only survivals of the 12 patients with hemorrhagic pancreatitis. The steroids were found to be particularly helpful in two patients who underwent operations.

Physiologic Aspects of Idiopathic Unilateral Hyperlucent Lung

D. C. Kent (Naval Hosp, San Diego, Calif) *Amer Rev Resp Dis* 90:202 (Aug) 1964

This report deals with the clinical, radiographic, and physiological data of three cases of idiopathic unilateral hyperlucent lung, an entity which appears to be present as a distinct clinicoradiological entity. Evidence points to the fact that this entity may be one of primary vascular origin. Unilateral end tidal to arterial carbon dioxide tension gradients were noted in two cases on the side of the involvement. The gradient was noted to be greatest in the case with the more severe vascular impairment. This measure may be of value in various types of clinical problems and bears further investigation. A review of the literature regarding this entity is presented, and the present concepts of its etiology, pathology, and physiologically oriented treatment is elucidated.

Ectopic Pregnancy — Symptoms and Diagnosis

Harold A. Kaminetzky, M.D.*

Pregnancy is ectopic when the fertilized ovum implants on any tissue outside of the endometrial cavity. Thus, cervical and cornual pregnancy are ectopic even though implantation is within the uterus. The symptoms of any patient depend to a large extent on the site of embryonic implantation. For this reason the condition is often difficult to diagnose.

Usually, amenorrhea is the first symptom noted. *Pain* usually follows the amenorrhea and brings the patient to the doctor. Chronologically, vaginal spotting may precede or follow the pain. The patient often indicates that her period was late; finally bled but usually less than during a normal menstrual period. The menstrual delay is the result of chorionic gonadotrophin produced by the trophoblast which prolongs the life of the corpus luteum and therefore the decidua. However, when the trophoblast dies, gonadotrophin is withdrawn and endometrial shedding and bleeding follow. If implantation occurs in an area permitting the fetus to grow for a considerable period of time, other endocrine related symptoms of pregnancy such as breast tenderness may develop.

The pain may be intermittent or continuous and described as soreness, cramping or tearing. Since most ectopics are tubal, the pain is often one-sided and physical examination usually elicits tenderness on the same side with little or none on the other. A distinct mass may or may not be palpable but frequently differences are detected between the sides. At times there is a feeling of fullness or doughiness on the affected side.

The triad of symptoms strongly suggesting tubal ectopic pregnancy is: a menstrual aberration, unilateral lower abdominal pain and mass.

A dramatic but uncommon story is that of amenorrhea, vaginal spotting and sudden severe lower abdominal pain followed by shock. This picture may develop if the fetus implants in the isthmus of the fallopian tube. Here, the tube is narrow and not distensible. As the fetus grows the elastic limits of the tubal wall may be reached and rupture may occur. The vascularity developed in response to implantation can cause massive bleeding into the peritoneal cavity followed by rapidly developing shock.

If implantation occurs near the fimbriated end of the tube, development can continue for a relatively long period of time. Here, the tube has a considerable diameter and the fetal mass can grow toward its open end. In this location there is less likelihood of tubal rupture; instead, there may be leakage of blood from the tube into the peritoneal cavity. Blood is irritating to parietal peritoneum and the patient may complain of lower abdominal soreness and fullness.

Regardless of the site of tubal implantation, sudden detachment of the placenta may be followed by bleeding within the lumen. This may cause sudden tubal distention followed by reflex contractions perceived as cramping by the patient. In some cases there is early death of the fetus without tubal rupture or significant bleeding. The patient may experience a slightly late period, minimal pain and nothing more. Rarely, rupture of the tube occurs along the line of attachment of the mesosalpinx and the fetus may continue to develop between the leaves of the broad ligament. Another outcome of tubal ectopic pregnancy is extrusion of the fetus into the peritoneal cavity through the fimbriated end. If bleeding is minimal, the symptoms can be mild and disappear altogether. Infrequently, the fetus may begin to develop in the tube and implant secondarily in the peritoneal cavity and continue to grow as an abdominal pregnancy.

It is obvious that no single symptom complex will cover all of these possibilities. Therefore, the most useful single factor leading to correct diagnosis is unfailing suspicion. Lower abdominal pain in a patient in the childbearing years should raise the question of ectopic pregnancy at once. Ask if the pain is one-sided and about recent menstrual irregularity. Check for tenderness especially marked on one side; move the cervix, often this will produce tenderness on the affected side. The uterus may be enlarged, its growth early in pregnancy is produced by placental estrogen whether or not the fetus is in the uterus.

Among the clinical and laboratory aids, temperature, the white blood cell count and hematocrit are most useful. Temperature is usually within normal limits with ectopic pregnancy. A

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temperature elevation suggests an inflammatory process such as pelvic inflammatory disease or pyelitis. Elevation of the white blood cell count also suggests inflammation. Although free blood in the peritoneal cavity may induce a slight leukocytosis, levels above 10-12,000 are rare. Patients with unruptured ectopics or those having only slight leakage of blood can have relatively normal hematocrits. Thus, a normal hematocrit does not rule out the condition but simply removes the aura of haste. A low hematocrit tends to indicate the need for exploration without great delay. Obviously, a rapid pulse rate and low blood pressure also indicate exploration.

A positive biologic test for pregnancy does not differentiate between an ectopic pregnancy and intrauterine pregnancy with threatened or incomplete abortion. If the test is negative, ectopic pregnancy with placental death cannot be ruled out. It is of no value if immediate operation is indicated by the presenting symptoms and findings.

Basically, three surgical procedures are invoked to help establish the diagnosis. They are: colpocentesis, colpotomy and celiotomy. Colpocentesis is a screening procedure. If dark, non-clotting blood is aspirated from the peritoneal cavity, exploration is indicated. On the other hand, a negative tap does not rule out ectopic pregnancy with insufficient free blood. At times a needle may be plunged into a vein, however, fresh venous blood clots. Colpotomy is a convenient method of visualizing and palpating the adnexa. A positive diagnosis can usually be made by this means. When there is strong clinical evidence of intra-abdominal bleeding, celiotomy may be invoked without preliminaries.

Autopsy Findings in 127 Patients Following Fatal Traffic Accidents

J. F. Perry, Jr. (Ancker Hosp, St. Paul) and R. J. McClellan, *Surg Gynec Obstet* 119:586 (Sept) 1964

The clinical and autopsy records of 127 pedestrians, auto occupants, and cyclists who died after traffic accidents revealed the primary cause of death to be head injury. Hemorrhage following pelvic fractures was also an important cause of death in pedestrians. While the majority of these patients received vigorous treatment, including blood replacement, the severity of the injury was underestimated in a few. Blood replacement, as measured against the interstitial, retroperitoneal, and intra-abdominal hemorrhage demonstrated at autopsy, was inadequate. The majority of patients who reached the hospital alive and later died from thoracic trauma succumbed to the deleterious effects of flail chest. Recognition of abdominal injuries in traffic victims is difficult. If all abdominal injuries are to be recognized and successfully treated, not only must the patients with obvious signs be explored, but also those in whom the diagnosis is less clear-cut. Patients with such injuries, who reach the hospital alive, usually survive long enough for adequate treatment to be carried out.

Effect of Low Molecular Weight Dextran on Organ Perfusion and Sludging

C. R. Hitchcock et al (Research Laboratories, Minneapolis General Hosp, Minneapolis) *Surgery* 56:533-539 (Sept) 1964

Experiments with the hypothermic and normothermic extracorporeal perfusion of dog, baboon, and sheep kidneys were carried out. It was found that low molecular weight dextran used as a perfusate, with the addition of heparin and procaine, appears to be important in the successful extracorporeal hypothermic storage of dog and baboon kidneys. The addition of low molecular weight dextron to the perfusate in a pump oxygenator system seems to have brought success after repeated failures with normothermic perfusions of baboon and sheep kidneys for periods up to 24 hours. The combination of techniques for hypothermic extracorporeal storage for short periods of time and normothermic extracorporeal perfusion for periods up to seven hours has permitted autografting of normothermically perfused kidneys with successful resultant function. The antisludging effect of the low molecular weight dextran together with its beneficial, high oncotic qualities, appears to be important in both the hypothermic and the normothermic perfusions of the kidneys.

WHAT'S NEW?



The Importance of Sulfur in Biological Systems As Determined by ESR Studies

W. Lohmann*

Electron spin resonance (ESR) studies of macromolecules of biological interest have been made by several investigators. The spectra observed could only be explained in part and the exact nature of the remainder must still be determined. Recently several investigators[1,2,3,4] have reported the existence of a paramagnetic sulfur anion radical. It is the purpose of this communication to show that the sulfur (S) signal (perhaps as SO_4) was also found to be present in a great variety of biological specimens.

The ESR spectra of the following dry substances were recorded with a Varian Model V 4500 spectrometer (9.5 Gc/sec) equipped with a Model V 4560, 100 kc modulation unit: calf thymus deoxyribonucleic acid (DNA) and yeast ribonucleic acid (RNA) (Mann Research Laboratories), collagen and collagenase (Nutritional Biochemical Corp.), beef liver catalase (Worthington Biochemical Corp.), muco-protein (aqueous extract of B_1 zone of calf scapula), and tissue from heart and retina, which were obtained from deceased human beings within hours after death occurred. The position of the signals was determined with a standard DPPH (diphenylpicrylhydrazil) reference signal for which $g = 2.0036$. All measurements were done at room temperature except in the case of retinal tissue (77° K and 295° K).

In a few instances samples were irradiated in Lucite containers with 9×10^5 r (dose rate 9×10^4 r/min). Irradiation was performed with a beryllium-window x-ray tube (100 kV, 12 mA, HVL 0.064 mm Al; Philips Electronics Inc.). The x-ray tube was calibrated with an air-wall ionization chamber. The ESR spectra were determined immediately after irradiation.

The ESR spectra are shown in Figure 1. The S signal, already recognizable in the unirradiated samples, is in a few instances considerably enlarged after irradiation. Studies done over a certain period of time after irradiation showed that the signal is relatively stable; no significant decrease was observed within the first few days after irradiation. Since the sulfur peak was not always increased by irradiation it must be concluded that in a few substances the greatest possible odd-electron density was already achieved by a favorable stereochemical configuration of the sulfur-oxygen linkages. The clearly defined iron signal at about $g = 6$, measured in retina at 77°K, should be pointed out. An iron signal is also present in collagenase; in catalase it is displaced to another, lower g — value.

The presence of the S signal in a few of the substances investigated was expected since it is known that they contain sulfur. Since the S signal appeared in all substances investigated, sulfur (perhaps in form of sulfate) seems to have a profound significance in the biological activity of these substances. It has been shown that sulfur is important for energy-charge transfer processes in biological systems.[4] This concept was applied successfully to the process of vision,[5] the primary photochemical mechanism in photosynthesis,[6] and the photodynamic action of dyes.[7]

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I appreciate the generosity of Drs. A. Lindenbaum and K. Kuettner, Argonne National Laboratory, in furnishing us with the mucoprotein sample. The technical assistance of L. Martin is gratefully acknowledged. The work was supported in part by NIH grant RH 00-197.

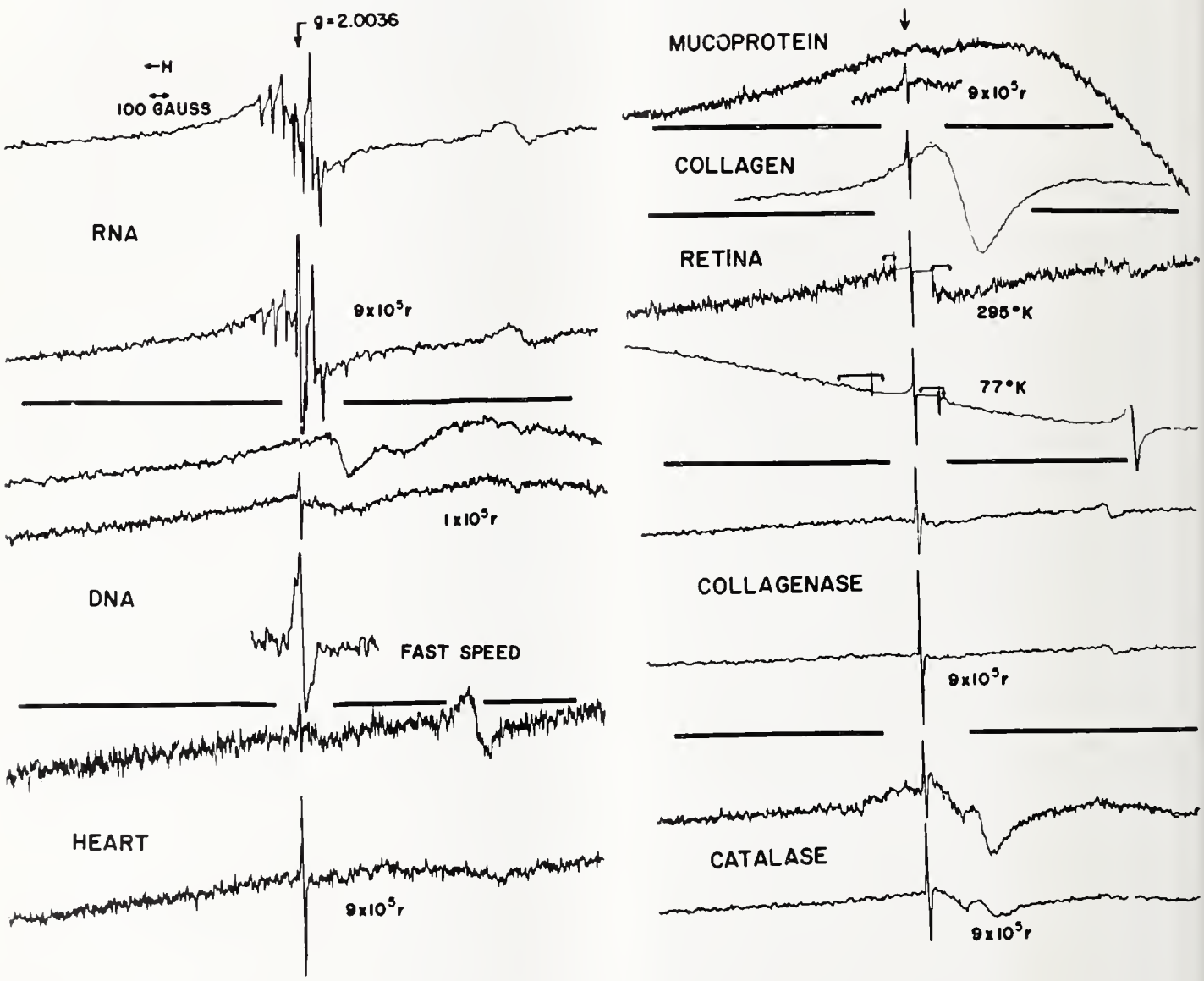
Summary

Electron spin resonance spectra of different biological material exhibited a sulfur signal at about g = 2. The biological significance of sulfur is discussed.

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Fig. 1: Electron spin resonance spectra of different biological samples. Details are given in text.



TEACHING SEMINAR

University of Arkansas Medical Center
Little Rock, Arkansas



Fundamentals of Bacterial Allergy and Immunological Evidence of Its Role in the Etiology of Asthma†

Vida H. Gordon, M.D.*

Today there is much more uniformity of agreement about the part the presence of an allergic or atopic constitution plays in the course of infection than the part bacteria and their toxic products play in the production of allergic diseases such as perennial allergic rhinitis, asthma or eczema. The persistent use of the word allergy to cover all types of immunological reactions has in many instances formed a mental block in the mind of the allergist. When he thinks of allergy, the atopic type is uppermost in his mind. Furthermore, confusion regarding the allergic response of human beings to bacteria has been enhanced by the failure of workers to realize that such a response of the host to bacteria or any antigen may be manifested in one of at least three different ways:

Types of Allergic Inflammatory Responses

Immediate Reactions:

(a) *20 Minute:* An immediate reaction with wheal and flare response on skin testing. This is due to the presence of atopic antibody or reagin, with an electrophoretic mobility of 7 S gamma$_1$ A or B$_2$A globulin. Clinical examples of this are perennial allergic rhinitis, asthma, anaphylaxis and the local wheal and flare cutaneous manifestations, such as urticaria.

(b) *Arthus or Anaphylactic:* An immediate type of reaction though occurring somewhat later than the above, almost an intermediate group, in which the host has developed circulating precipitating antibody which has a 7 S gamma$_2$ globulin electrophoretic mobility. Conditions produced in man by this response might be serum sickness and periarteritis nodosa. If there is sufficient circulating precipitating antibody it is even possible to get fatal anaphylaxis when man is challenged with homologous antigen which could be a bacterial product. A cutaneous example in animals of reaction to circulating precipitating antibody is the Arthus reaction which develops at 4-6 hours in animals subsequently challenged intradermally with the sensitizing antigen after a latent period of 10 days to two weeks. It is evident that intermediate inflammatory reactions may be triggered by human precipitating antibody.

Delayed Reactions:

A third reaction of a host to bacteria may be the delayed type of immunological response. This may be demonstrated by intradermal testing with antigens prepared from the particular causative agent and the inflammatory response is highly specific. For example, injection with the tubercle bacillus confers sensitivity only to that bacterium or its constituents. This type of hypersensitivity is called "delayed" because of the latent period which occurs between the application of the challenge antigen and the appearance of the gross signs of the inflammatory response. In the case of the tuberculin test, this period is 18-24 or 48 hours, with the appearance of the maximum gross reaction depending on the degree of sen-

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†Presented at the Southwest Allergy Forum Annual Meeting, Hot Springs, Ark., April 5, 1964.

sitivity of the host, and the amount of antigen used in the test. The amount of antigen necessary to induce a delayed hypersensitive state is very small and comparable in amount to that which might be released during a bacterial infection.

Delayed inflammatory reaction result from interaction of antigen with sensitized cells and this process does not involve serum antibody at all. Using disrupted extracts of leucocytes taken from the peripheral blood of sensitized donors, Lawrence and Pappenheimer (3) successfully sensitized Schick positive persons to purified diphtheria toxoid. They demonstrated the fact that they had induced a state of delayed hypersensitivity to the diphtheria toxoid by means of skin tests that showed the "tuberculin type" of reaction.

Kuhns and Pappenheimer (4) using the diphtheria organism have demonstrated the responses that could be produced by bacterial infection. These are summarized in Table I. Materials that induce hypersensitive states are usually complex, thus a susceptible individual exposed to ragweed pollen will become sensitized to many pollen antigens or an infection such as tuberculosis will induce sensitivity to many mycobacterial components. The same is undoubtedly true for other bacteria such as K-diphtheriae, the pneumococci, streptococci or N. catarrhalis. It is difficult to separate and identify antigens concerned or the type or degree of sensitivity of any one component. As Table I shows more than one type of sensitivity may be induced in the same individual by a single given antigen depending upon the type of antibody he develops, and so we may get early responses with wheal and erythema or anaphylaxis from bacterial toxins, or later, early or intermediate responses and have periarteritis nodosa or serum sickness. Both of these, as Table I illustrates, are produced by circulating antibody. These responses can be transferred to a normal individual with serum.

Lawrence

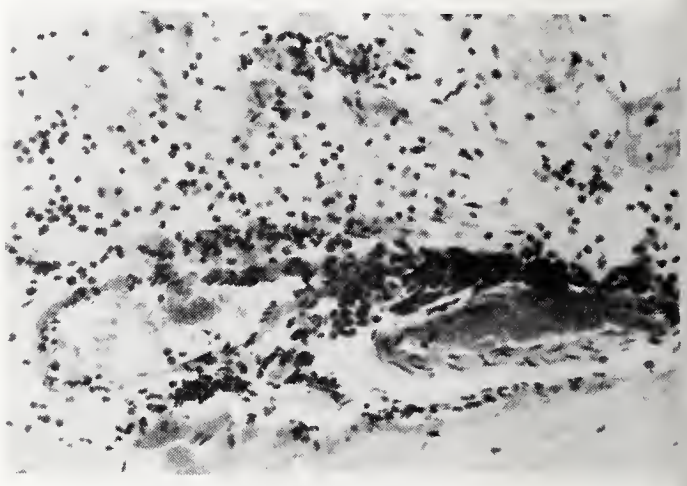
Table I
TYPES OF ALLERGIC INFLAMMATORY RESPONSES

	Early Responses		Delayed Responses
	Wheal and Erythema	Arthus or Anaphylactic	
Clinical state	Hay fever, asthma	Serum sickness	Tuberculosis, lymphogranuloma, histoplasmosis, syphilis, poison ivy
Sensitizing material	Pollens	Soluble proteins, carbohydrates	Bacteria, viruses, fungi, spirochetes, plant materials, simple chemicals
Antibody	Present in serum Non-precipitable Heat-labile	Present in serum Precipitable Heat-stable	Absent in serum Absent in cells Unknown
Transfer of sensitivity	With serum	With serum	Not with serum With cells
Cytotoxicity of antigen for explanted sensitive cells	None	None	Present

AMER. J. of MED. Vol. 20:430, 1956

Examples of Intermediate Reaction (Arthus)

An example of the Arthus reaction, or the intermediate type that develops in 4-6 hours is presented in the photomicrograph presented in Figure 1. This is a section taken from an Arthus reaction produced by the author in a guinea pig immunized with a 30 ug protein N dose of alum precipitated pyridine ragweed (APPR) and challenged intradermally on Day 82 with aqueous ragweed extract (ARE). The gross reaction measured 30 x 32 mm. erythema and 30 x 32 mm. induration with a change in skin thickness of 28×10^{-1}. It is evident that there was extensive perivascular infiltration of polymorphonuclear leucocytes. On the right side of the lower part of the field is a vessel partially plugged with leucocytes sticking to the endothelial wall of this vessel. Around the vessels there is evidence of hemorrhage in the perivascular tissues with a slight break in the vascular wall of the vessel on the right.

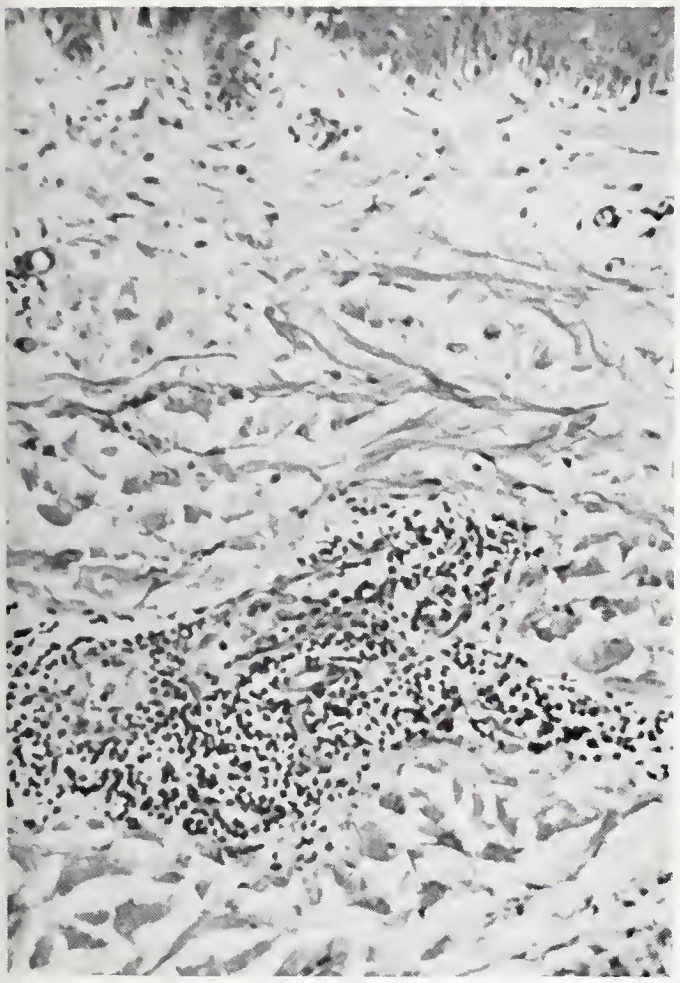


Legend for Figure 1: Photomicrograph of a 4 Hour (active Arthus) from a guinea pig given a single 30 ug protein N immunizing dose APPR, i. d. injection of 10.00 ug protein N ARE on Day 82, showing thrombosis of one vessel, perivascular infiltration of polymorphonuclear leucocytes and hemorrhage around the other vessel. Hematoxylin and Eosin stain (X 100).

Example of Delayed Reaction

On the other hand, by far the most common type of response to bacteria, is the delayed response. This may be produced also by fungi, viruses or even chemicals and transfer of this sensitivity to a normal person can be accomplished with cells only, not serum.

One of the best examples of the delayed re-



Legend for Figure 2: Photomicrograph of a tuberculin skin test in a tuberculous guinea pig, biopsied at 24 hours, showing extensive perivascular infiltration of essentially mononuclear cells in the dermis with no vessel damage and no hemorrhage. Hematoxylin and Eosin stain (X 60).

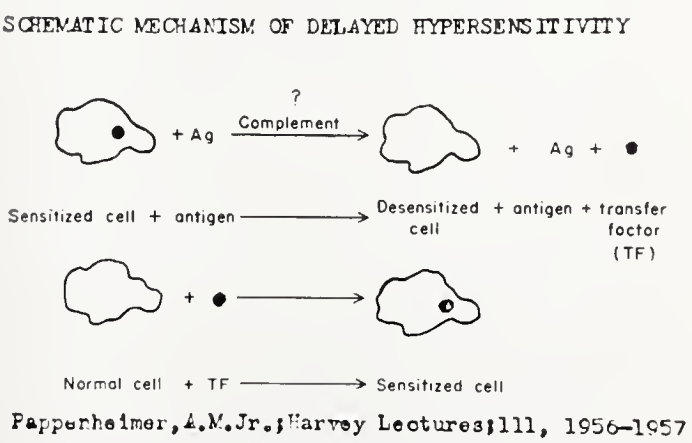
action is the tuberculin skin test. Figure 2 presents the photomicrograph of a section taken from such a reaction in a guinea pig. This reaction grossly measured 26 x 26 mm. and the gross necrotic area of this same lesion measured 5 mm. in cross diameters. There was no discoloration of the skin suggesting hemorrhage. Microscopically, there was extensive perivascular cellular infiltration in the dermis but the cells were essentially mononuclear. There were very few polymorphonuclear cells. There was no vessel damage and there were no extravascular red blood cells. This histological picture is characteristic of the delayed hypersensitive response at 24 hours.

Mechanism of Delayed Reaction

Pappenheimer (3) devised a schematic diagram to explain the mechanism of the delayed hypersensitive reactions and this diagram is presented in Figure 3. He postulated that the leucocytes of sensitive individuals contain, in or on their surface structure, a component or transfer factor with a high affinity for antigen. According to his theory combination of this with antigen, possibly mediated by complement, results in the release of the antigen-transfer factor complex; this antigen-transfer complex then dissociates and liberates the "transfer factor" (which is not globulin) and free antigen. Free antigen is then available to interact with and perhaps damage other sensitive cells, while normal cells gravitating to the area may ingest or adsorb transfer factor and thereby become sensitive. A chain reaction of this type could progress until antigen is no longer available.

Kuhn's and Pappenheimer (4) in 1952 used the purified diphtheria toxin-antitoxin system as a model to demonstrate the various types of immune responses that could and did occur. The stimulus for their investigation occurred when Dr. S. H. Lawrence brought the following patient to their attention. A six-year-old boy with a personal and family history of allergy received a booster dose of purified diphtheria toxoid by his school physician and within minutes he developed severe asthma. Examination of his serum drawn two days later showed an antitoxin titre of 50 units/cc by the rabbit skin test but no demonstrable precipitating antitoxin. This serum possessed wheal and flare properties in high titre when passively transferred to the skins of Schick positive recipients. Schick positive individuals lack antibody to neutralize the toxin effect in the skin, and I mention it since we as allergists usually think of a + reaction indicating presence of antibody. Usually patients who receive diphtheria toxoid booster doses develop a precipitating form of antitoxin but this child developed a skin sensitizing non precipitating antibody, or so called reagin, and in this instance the bacterial product that produced it was diphtheria toxoid.

These workers then hyperimmunized 131 med-



Legend for Figure 3: Contained in title of photograph of diagram.

ical students and clinic patients with 150 ug. of highly purified diphtheria toxoid. Of these individuals, 30.5 per cent developed immediate skin reactions of the wheal and flare type when Schick tested with purified diphtheria toxin using purified toxoid as a control. Eighty-seven per cent of those showing immediate reactions gave either a personal or family history of allergy or both. These individuals had no demonstrable precipitating antitoxin, but wheal and erythema properties in high dilution were demonstrated by passive transfer to Schick positive individuals. In other words they had entirely atopic antibody or non precipitating, skin-sensitizing antibody. These adults when Schick tested with toxin and toxoid control would give a positive wheal and flare reaction at 20 minutes, but a negative reaction at 24, 48 and 72 hours—indicating that their sera had atopic antibody that neutralized the toxin effect in the skin.

Another group developed sera that showed predominantly precipitating antibody as indicated by a close correlation between the rabbit skin test and the quantitative precipitin titers. These individuals would give a negative 24, 48 and 72 hour reading at both sites showing that they were immune and their sera possessed no atopic antibody to the protein material in the test solution but did have precipitating antibody that had neutralized the toxin.

In addition to these responses, delayed inflammatory reactions may result from immunization with diphtheria toxoid. This does not appear to involve serum antibody but rather sensitized cells (3, 4). It can be demonstrated by Schick testing with diphtheria toxin and a control of diphtheria toxoid. If delayed hypersensitivity has developed both toxin and toxoid control sites are positive at 24 hours, but negative at 20 minutes and the toxin site may or may not be positive at 48 and 72 hours, depending upon the absence or the presence of precipitating antitoxin. Those individuals with delayed hypersensitivity alone, may be susceptible to diphtheria in that they may or may not have sufficient precipitating antitoxin, but nevertheless they also have delayed hypersensitivity because of previous exposure to the toxin.

It can be inferred from the discussion of the Schick test that for proper interpretation of skin tests whether they be done with bacterial products or any other antigen, they should be read at 20 minutes, 24 and 48 hours and one should also inquire as to any noticeable reaction at 4 hours. All of us have observed wheal and flare reactions when skin testing with bacterial products but the bulk of the patients will develop maximum redness and induration at the skin test site in 24 to 48 hours with a few getting maximum redness and induration at 4 hours. It is evident then that bacteria may be capable of stimulating in the host the formation of two types of circulating antibody as well as the delayed hypersensitive state.

Danilovic in 1958 (5) reported at the Third International Congress of Allergology in Paris that in 8000 asthmatic patients he had studied and treated over a period of ten years, 20 per cent gave positive immediate reactions to bacterial skin tests and 14 per cent showed delayed reactions. Others have reversed these percentages and it probably depends upon the techniques of bacterial cultivation used and what the test material contains. Dr. Hampton (6) reported 93 per cent (13 of 14) delayed skin reactions to Neisseria Catarrhalis and 85.7 per cent (12 of 14) positive immediate skin reactions.

So much for the fundamental aspects of bacterial allergy. What is the immunological evidence for its role in the production of asthma?

Evidence for Role of Bacteria in Production of Asthma

One of the most commonly encountered evidences that bacterial products may be inducing asthma in a particular individual is the production of an asthmatic attack following small doses of vaccine. Touart and Thomas (7, 8) commented as far back as 1932 on the fact that overdoses of vaccine sometimes caused intensification of asthma, a flareup of the infected foci (such as sinuses) and also that relief, by vaccine therapy paralleled a decrease in intensity of skin reactions. Cooke (9) in 1947 stated he could reproduce the asthmatic attack by means of small doses of vaccine and that in such instances the asthmatic response was a delayed reaction beginning 12 to 48 hours after the injection of the vaccine thus incriminating the delayed hypersensitive mechanism.

Blatt and Nantz (10) discarded skin tests for determining bacterial sensitivity in favor of a test which consists of suspending leukocytes of the patient in filtrates from various strains of bacteria and observing the percentage of killed white blood cells after seventeen hours incubation. They then employ the filtrate, indicated, for desensitization. These authors state they have found this method effective in patients with sinusitis, asthma and

rheumatoid states as well as some other conditions. They use routinely 161 filtrates of different bacterial strains. The advantage of this test is that it seems to be specific. The disadvantage is that it takes two technicians the better part of four days to do it.

Hajos (11) attempted to correlate skin test results with bronchial tests using bacterial solutions in infective bronchial asthma. Approximately 40 per cent of 62 asthmatics gave evidence of some bronchospasm following inhalation of extracts of H. Influenzae and mixed streptococci. Of 32 with positive bronchial tests who were also skin tested, ten gave negative tests. Ten non allergic patients gave no positive bronchial tests.

Hampton and his group (6) studied 16 patients whose asthma was considered to be non-extrinsic and due to infection. By aerosolization with extracts of several fractions of N. Catarrhalis they were able to precipitate asthma in 3 to 30 minutes in 14/16. The antigen solutions for aerosol contained 2 mgm. protein nitrogen in a total volume of 4 cc. None of the nine controls developed asthmatic symptoms from the same procedure. 5/14 patients in whom asthma was induced by aerosol had skin sensitizing antibody that could be passively transferred. 2/16 developed "delayed" asthma, one at 3 hours and one at 10 hours. The authors suggest that steroids may have influenced the low incidence of "delayed" asthma.

Summary

Many substances of bacterial origin are able to produce specific sensitization in man and in animals. With human hypersensitivity to bacteria, there can be at least three possibilities.

1. If the bacterial products are given subcutaneously or by aerosol it is possible to produce in some individuals atopic antibody. This type of altered immune response may be a characteristic peculiar to the genetically susceptible few. Subsequent challenge with the antigen can produce immediate atopic disease or anaphylaxis. Certainly some attacks of infectious asthma are mediated this way.

2. On the other hand, a subcutaneous injection of bacterial products, as the discussion of diphtheria toxoid demonstrated, can induce precipitating circulating antibodies such that subsequent challenge after a latent period can produce anaphylaxis if the dose of antigen is large and antibody titre is high.

3. There is also considerable evidence that the bulk of patients with bacterial asthma have it as a manifestation of delayed hypersensitivity. Swineford (12) states that the "tuberculin type" or delayed type of allergy may be produced with a variety of organisms other than tubercle bacilli and that there is a lag of 12 to 48 hours between the beginning of acute, or exacerbations of chronic infections and the appearance of asthma. The asthma once started is apt to last longer than the active signs of the infection that precipitated it.

4. In conclusion, the mechanism by which infection causes asthma may vary in individual patients and the entire story is not yet told. It behooves each of us to use all the immunological tools available to continue to search for the answers.

Acknowledgment

The author wishes to acknowledge her indebtedness to Dr. Herbert C. Mansmann, Jr., of the Children's Hospital of Pittsburgh who reviewed this paper and gave her valuable constructive criticisms when it was being prepared.

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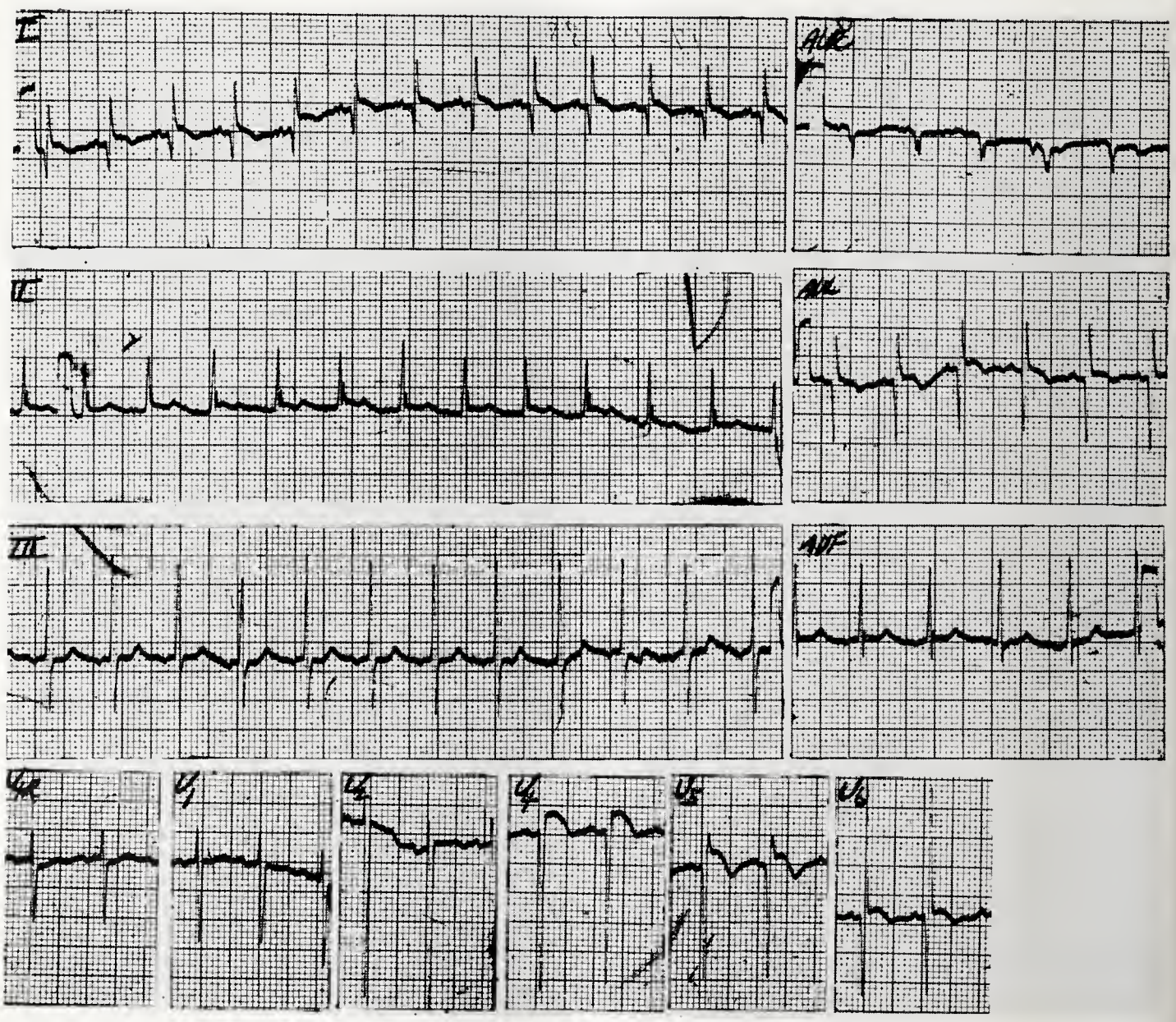
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ELECTROCARDIOGRAM OF THE MONTH

WHAT IS YOUR INTERPRETATION?

AGE: 10 weeks SEX: F BUILD: BLOOD PRESSURE: Not recorded
CARDIAC DIAGNOSIS: Observation for congenital heart disease
OTHER DIAGNOSES: None
MEDICATION: None
HISTORY: Congestive failure since 3 weeks ago (7 weeks of age)

Answer on page 270



The Department of Medicine, University of Arkansas Medical Center
James S. Taylor, M.D., Professor of Medicine

WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

Answer on page 270



No. 16-14-21 28-year-old male

HISTORY: The patient had experienced dyspnea on exertion for approximately three years. During the past six months the dyspnea became progressively more severe. Breath sounds were faint over the entire left chest and upper portion of the right chest.



PUBLIC HEALTH AT A GLANCE

A Study of Blastomycosis in Arkansas

Introduction

Very little is known about the epidemiology of blastomycosis. The infection is presumably contracted from the soil and not by contact with infected men or animals. Entry is almost certainly via the respiratory tract. The disease is known to be endemic in certain parts of the United States, but the extent of the problem has not been determined. The frequency of subclinical infections is not known as there is no reliable method, such as skin test, to detect previous experience with the fungus. An epidemiological study of blastomycosis in humans should contribute a great deal to our knowledge about the disease.

Arkansas is an endemic area for North American blastomycosis. Since 1924 there have been 102 proved cases reported. In 1960 a study of blastomycosis in dogs was begun by the Arkansas State Health Department, in cooperation with the practicing veterinarians and the Communicable Disease Center, U. S. Public Health Service. As a result of this study more than 70 cases of canine blastomycosis have been diagnosed and reported. The county of residence at time of onset of disease for the human and canine cases is shown on the accompanying map.

Objectives of Study

The Arkansas State Health Department, in cooperation with the University of Arkansas School of Medicine and the Communicable Disease Center in Kansas City, Kansas, is planning a cooperative study of blastomycosis in Arkansas. The study is designed to:

1. Evaluate and improve diagnostic procedures, mainly the blastomycin skin test and serologic procedures.
2. Determine the source of human infections. Soil is believed to be the reservoir of the fungus, but limited attempts to isolate the fungus from soil collected in Arkansas have not been successful.
3. Determine if subclinical infections occur and to what extent.

Plan of Study

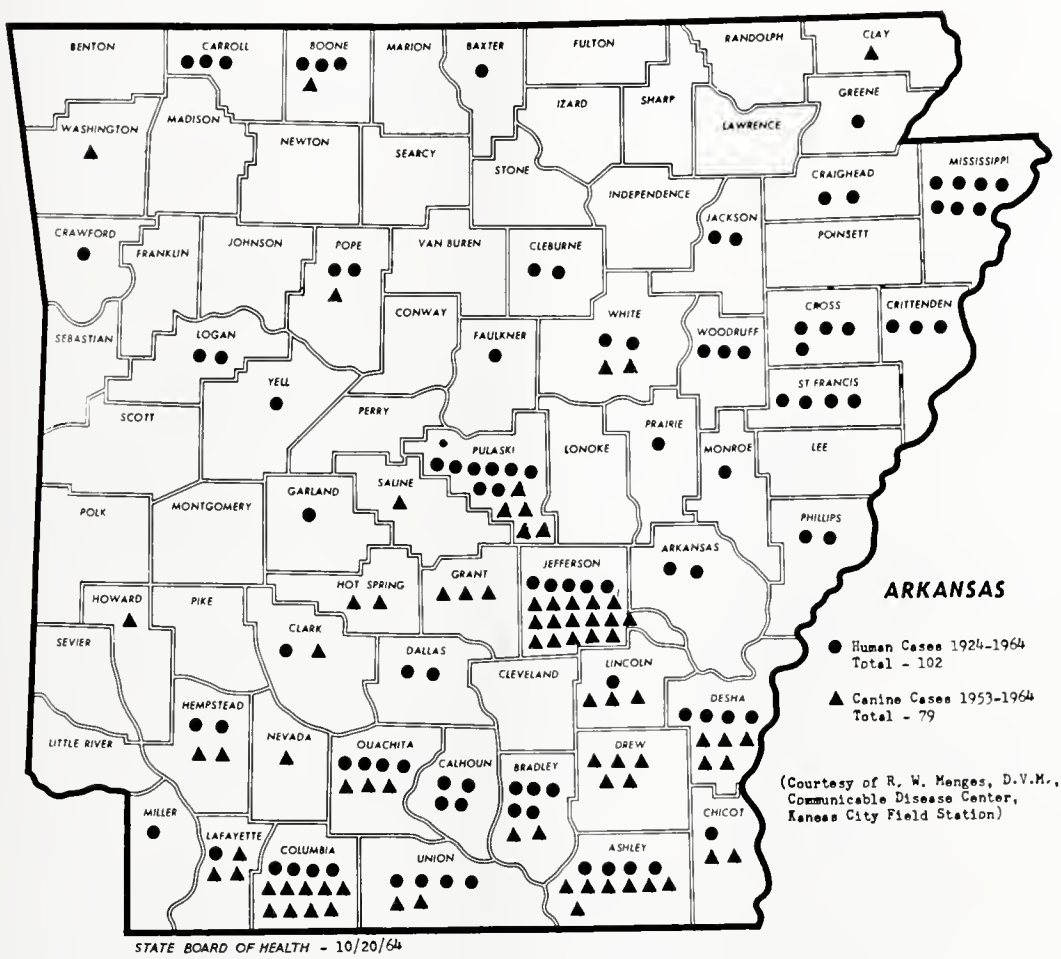
An extensive investigation of recently diagnosed cases and each new proved case of blastomycosis will be conducted. The investigation will be centered around the proved case and family members of the case. Clinical data on the patient will be reviewed and an attempt made to document the date of onset of the disease. Data will be obtained from the patient regarding his occupation, place of residence, and possible source of exposure to the fungus. Any promising leads as to the source of infection will be followed.

A visit to the residence of the patient will be made by the physician epidemiologist. An illness history will be obtained on family members. Diagnostic skin tests with histoplasmin and blastomycin will be applied to members of the family, and blood samples will be obtained for study. These procedures will be used to help determine

if subclinical or mild infections have occurred in other members of the family. Any pet or farm animals owned by the patient will be tested also. Soil will be collected from any sites which are suspected of harboring the fungus and examined in the laboratory for the presence of the fungus. A control family in the same block or nearby farm may be selected and tested by skin and blood tests.

Visits into areas by the physician epidemiologist will be coordinated through the State Health Department. In all instances, permission will be obtained from the family physician before a case of blastomycosis is investigated.

HUMAN AND CANINE BLASTOMICOSIS IN ARKANSAS





EDITORIAL

Lymphatics of the Heart

Alfred Kahn, Jr., M.D.

Very little research has been performed on cardiac lymphatics. Recently, A. J. Miller has published a discussion of cardiac lymphatics (Archives of Internal Medicine, Volume 112, page 501, October, 1963).

The author states that studies using India ink injections into living dog hearts indicate the presence of epicardial, myocardial and subendocardial lymphatic plexuses. It appears that the subendocardial plexus drains into the myocardial plexus, and this in turn is drained into the subepicardial plexus. The subepicardial plexus forms drainage lymphatics which coalesce and form a trunk or trunks leading to a large cardiac lymph node adjacent to the superior vena cava. Medically, it would be important to know if there are lymphatics in the heart valves of man; these are known to be present in dogs.

The flow of lymph, Miller reports, is rapid and probably occurs in both systole and diastole; dyes injected into cardiac lymphatics are said to appear in the cardiac lymph node in several minutes. The amount of cardiac lymph flow in dogs is said to be 0.8 cc per hour. Increased flow occurred after adrenalin administration, plasmaphoresis, after increased cardiac blood inflow, and after decreased blood oxygen content. The protein content of cardiac lymph was 3.6 per cent. Miller feels that previous experimental work demonstrates a flow of protein, fluid, and electrolytes into the cardiac interstitial spaces and out via cardiac lymphatics which act as a safety valve as interstitial pressure builds up.

As in other places in the body if the lymphatics are severed edema results and there is predisposition to inflammation from various causes, including bacteria. Ligation of the cardiac lymphatics in dogs tended to produce interstitial edema and disseminated focal necrosis; Miller further reported that in his own experiments there was ventricular subendocardial hemorrhages and thickening of the ventricular endocardium.

Miller hypothecates that endocardial fibroelastosis, a disease of infants, might be related to injured lymphatics while the infant was in utero. On the other hand, a similar process in adult man might lead to the different pathological picture of endomyocardial fibrosis. Miller also believes that lymphatics probably exist in the heart valves, and injury to these lymphatics makes the valve more susceptible to infection. Speculation is also presented as to whether or not lymphatic drainage, if effective, might not reduce the degree of scarring after infarction and if the lymphatic drainage is impaired in myocarditis, perhaps the process is made chronic.

MEDICINE IN THE NEWS

Dr. Shannon Is Speaker at Medical Meeting

The Baxter County Medical Society met October 29th at the Baxter General Hospital. Guest speaker was Dr. Karr Shannon, Jr., psychiatrist of Little Rock and formerly a resident of Melbourne. Dr. Shannon discussed the psychiatric drugs in use today, and several mental health problems.

Marks Schwarz Lecturer in Cardiology for the Year 1964

The Division of Continuing Education of The University of Texas Graduate School of Biomedical Sciences at Houston presented the Marks Schwarz Lecturer in Cardiology for the year 1964 on December 7th, 8th and 9th. Dr. Victor A. McKusick, Baltimore, Maryland, spoke on "Recent Advances in Cardiovascular Disease."

Talks Given by Dr. C. Lewis Hyatt on Suggestion and Hypnosis

Dr. C. Lewis Hyatt, Monticello, Arkansas, recently gave talks to the Drew County Medical Society and to the Monticello Rotary Club on "The Use of Suggestion and Hypnosis in Medicine."

Medical Education Foundation for Arkansas Receives Contribution

An Arkansas physician has recently made a contribution to the Medical Education Foundation for Arkansas as a memorial to the late Dr. T. E. Rhine of Thornton. The doctor, wishing to remain anonymous, stated that he hoped that other physicians would also show their appreciation for having known Dr. Rhine by contributing something to the Medical Education Foundation in his memory.

Dr. Rhine was a well-known, active physician of Southwest Arkansas who practiced medicine for 66 years in his community until two weeks before his recent death.

Contributions may be sent to the Medical Educational Foundation for Arkansas, P.O. Box 1208, Fort Smith, Arkansas, or to Dr. Robert Watson, Chairman of the Board of Trustees of the Medical Education Foundation for Arkansas, 1026 Donaghey Building, Little Rock, Arkansas. Such contributions will be acknowledged both to the sender and to the family of Dr. Rhine.

Import of Medical Manpower

The number of graduates of medical schools located in countries other than the United States or Canada, i.e., foreign-trained physicians, newly licensed to practice medicine in the United States has increased dramatically since 1950. In 1950 approximately 6,000 physicians were added to the medical profession in this country. Of these, about 300, or 5 per cent, were graduated from

TABLE 1†

RATIO OF FOREIGN-TRAINED LICENTIATES TO THE TOTAL LICENTIATES REPRESENTING ADDITIONS TO THE MEDICAL PROFESSION IN THE U. S. 1950-1963

Year	Total New Medical Licentiates	New U. S. and Canadian-trained Licentiates	New Foreign-trained Medical Licentiates	% of New Medical Licentiates Attributable to Foreign-trained M.D.s
1950	6,002	5,694	308	5.1
1951	6,273	5,823	450	7.2
1952	6,885	6,316	569	8.3
1953	7,276	6,591	685	9.4
1954	7,917	7,145	772	9.8
1955	7,737	6,830	907	11.7
1956	7,463	6,611	852	11.4
1957	7,455	6,441	1,014	13.6
1958	7,809	6,643	1,166	14.9
1959	8,269	6,643	1,626	19.7
1960	8,030	6,611	1,419	17.7
1961	8,023	6,443	1,580	19.7
1962	8,005	6,648	1,357	17.0
1963	8,283	6,832	1,451	17.5
Total	105,427	91,271	14,156	13.4

†Source: State Board Number, J.A.M.A., 188: pp. 883 and 892, (June 8) 1964.

foreign medical schools. In contrast, however, in 1963 nearly 8,300 medical licentiates were added to the profession, of whom 1451 or 17.5 per cent, were foreign-trained physicians. In 1963, therefore, the number of foreign-trained physicians licensed in this country was equal approximately to the output of 14-16 average-sized U. S. medical schools.

Table 1 presents the annual total of new medical licentiates in the U. S. from 1950-1963 relating the number of new U. S. and Canadian-trained licentiates to the number of foreign-trained licentiates.

In Table 2 the number of U. S. internships and residencies filled annually by foreign-trained physicians for the corresponding years is seen. Over one-fourth of the internships filled in 1963 were filled by foreign-trained physicians, contrasted to one-tenth in 1950.

The increase in the number of residencies filled in 1963 over 1950 by foreign-trained physicians was almost as great as that of the internships. Almost one-fourth of the residencies filled in 1963 were filled by foreign-trained physicians, contrasted to less than one-tenth in 1950.

Figure 1 contrasts the trends from 1950-1963 in the U. S. of the number of foreign-trained physicians in internships and residencies and foreign-trained new licentiates with the number of new licentiates trained in the medical schools of the U. S. and Canada. If the number of graduates of foreign medical schools receiving training and the number of them being licensed in the U. S. continues at present levels, they will maintain a position of increasing importance in the national pool of medical manpower.

Submitted by the Division of Operational Studies of the AAMC.

TABLE 2†

RATIO OF FOREIGN-TRAINED PHYSICIANS FILLING INTERNSHIPS AND RESIDENCIES TO TOTAL INTERNSHIPS AND RESIDENCIES FILLED IN THE U. S. 1950-1963

	Internships Filled			Residencies Filled		
Year	Total	By Foreign-Trained M.D.s	% By Foreign Trained M.D.s	Total	By Foreign-Trained M.D.s	% By Foreign-Trained M.D.s
1950	7,030	722	10.3	14,495	1,350	9.3
1951	7,866	1,116	14.2	15,851	2,233	14.1
1952	7,645	1,353	17.7	16,867	3,035	18.0
1953	8,275	1,787	21.6	18,619	3,802	20.4
1954	9,066	1,761	19.4	20,494	3,275	16.0
1955	9,603	1,859	19.4	21,425	4,174	19.5
1956	9,893	1,988	20.1	23,012	4,753	20.6
1957	10,198	2,079	20.4	24,976	5,543	22.2
1958	10,352	2,315	22.4	26,758	6,042	22.6
1959	10,253	2,545	24.8	27,590	6,912	25.0
1960	9,115	1,753	19.2	28,447	8,182	28.8
1961	8,173	1,273	15.6	29,637	7,723	26.0
1962	8,805	1,669	19.0	29,239	7,062	24.2
1963	9,636	2,566	26.6	29,485	7,052	23.9
Tot.	125,910	24,786	19.7	326,895	71,138	21.8

†Source: AMA Directory of Internships and Residencies, 1964.

THE MONTH IN WASHINGTON

The Johnson Administration has placed so-called medicare at the top of its legislative program for 1965.

In a policy paper issued a few days before the national elections, President Johnson said:

"First we must provide adequate hospital and nursing home care for our senior citizens by a sound program financed through contributory social insurance. I pledge that the legislation to accomplish this will head my program next year."

Administration forces in Congress expressed confidence that most of Johnson's legislative program would be approved next year in light of the Democratic victory in the elections. Democrats gained a net of 37 seats in the House.

The Administration was reported to be considering a program that would be financed by a separate employer-employe tax rather than an increase in the social security tax as called for in legislation that died in a House-Senate conference committee when Congress adjourned in October.

In reiterating his opposition to social security financing, Rep. Wilbur D. Mills (D., Ark.), chairman of the Ways and Means Committee, said just prior to adjournment:

"I think one of the difficulties that has actually impeded the reaching of a sound solution is the insistence by the proponents of medical care on proceeding toward a solution through the existing OASDI (Social Security) system rather than in an all-out effort to solve the problem itself with some flexibility in their approach. In other words, there may well be within our reach solutions to the admittedly difficult and increasing problems of medical care for the aged which lie outside of attaching a Federal program to the framework of the OASDI insurance system . . .

"I would be hopeful that the basic prepayment concept might lead us in the direction of sound

approaches to this matter. There are other principles which we can embody to insure a sound medical program while at the same time preserving our basic social security insurance system."

Other points listed in Johnson's policy paper on health were:

"Second, we must step up the fight on mental health and mental retardation.

"I intend to ask for increased funds for research centers, for special teacher training, and for helping coordinated state and local programs.

"Third, we must expand our program to help train the doctors, dentists and technicians this nation desperately needs. Right now, the statistics show that we are importing interns and resident physicians from other countries which can ill afford to lose them.

"Fourth, we must enlarge programs to help disabled citizens rehabilitate themselves for useful employment.

"Fifth, we must increase existing programs of medical assistance to children of low-income families.

"Sixth, we must work to correct the deficiencies of young men who are rejected for military service because of health.

"Seventh, we must move ahead in the effort to protect the purity of the water we drink and the air we breathe. Air pollution, according to one estimate, causes $11 billion damage each year to property alone. No one can measure the damage to our children's lungs."

* * *

A total of $35 million in Federal funds has been appropriated to help finance construction of community mental health centers in 1965.

It is the initial allotment of funds for a $150 million three-year program of Federal grants-in-aid for building such centers. Grants will range from one-third to two-thirds of total construction costs.

The Department of Health, Education and Welfare said the centers built in 1965 will form the nucleus of the new national mental health program to provide comprehensive treatment of the mentally ill in the patients' home communities.

Grants will be administered and awarded to eligible sponsors of the centers by the National Institute of Mental Health of the Public Health Service under terms of the Community Mental Health Centers Construction Act of 1963 (Public Law 88-164).

The centers must provide a minimum of the following five essential services to patients: inpatient treatment, outpatient treatment, partial hospitalization, with around-the-clock emergency service available in at least one of these. Centers must also provide consultation and educational services to community agencies.

In addition to the construction funds for centers, NIMH will grant $12 million in 1965 to hospitals for the mentally ill and for the mentally retarded to improve treatment and care of patients.

NIMH also will award $6 million in inservice training grants during 1965 to upgrade skills of hospital personnel in providing comprehensive care for patients.

Other funds available to NIMH under the regular mental health appropriation of 1965 include $163.7 million for research, fellowships, training of professionals and State grants, and $24.2 million for Institute research and items of direct operations.

* * *

About two of every 15 American adults have definite heart disease and an additional one of nine have suspect heart disease, according to the Public Health Services National Heart Survey.

The survey comprised a sampling of 7,710 adults with 6,672 given physical examinations from 1959 through 1962. Major projected findings included:

—Of the 111.1 million American adults, 14.6 million have definite heart disease and 13 million have suspect heart disease. Of every 100 persons aged 18 through 79, 13.2 had definite heart disease and an additional 11.7 had suspect heart disease.

—Most commonly encountered was hypertensive heart disease. More than 10 million Americans suffer from it, and nearly 4.8 million others have suspect hypertension.

—Coronary heart disease accounts for 3.1 million definite and 2.4 million suspect cases.

—Women are more likely to have definite hypertensive heart disease; men more likely to have definite coronary heart disease or heart disease of congenital or syphilitic origin. Suspect hypertensive heart disease is more common in men than in women; suspect coronary disease more

common in women than in men.

—About 24.4 percent of negro adults have definite heart disease, twice as high as the incidence for white adults.

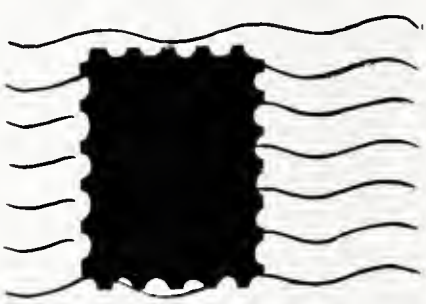
—The prevalence rates for suspect heart disease are 14.8 and 11.3 percent, respectively, for negroes and white.

—The prevalence of heart disease rises sharply with age. Less than two percent had definite heart disease in the 18-24 age group.

—About 39 percent of the men and 46 percent of the women in the 75-79 age group have definite heart disease.

—A large number of persons with heart disease have more than one manifestation.

LETTERS TO THE EDITOR



Little Rock, Arkansas
November 11, 1964

Dr. Alfred Kahn, Jr., Editor
Journal of Arkansas Medical Society
6th and Pulaski Streets
Little Rock, Arkansas

Dear Dr. Kahn:

The results are now final in the national election. In my opinion it would be a tragic mistake for the medical profession to disregard the reality of these returns. The people voted overwhelmingly for a president who has advocated a medicare bill tied to Social Security. Congressmen who supported the President's position were returned to Congress and many who opposed it were defeated. The administration bill almost passed the last Congress. Only a last minute effort in the Ways and Means Committee staved it off. It must be apparent to the most wishful thinker that the passage of this bill is now virtually assured.

Instead of a last ditch, hopeless fight against the passage of this bill, would it not be much wiser to join with administration leaders in writing a bill that we can live with—a bill that would be acceptable to both the administration and American medicine? Now is the time to seek an acceptable compromise. The passage of the Civil Rights Bill of 1964 is a striking demonstration of the failure of a last ditch, no-compromising policy. If the southern Senators had proposed an acceptable compromise at the outset of this struggle, I am convinced that a bill more acceptable to the South would have been enacted. I hate to see the medical profession make the same mistake.

The public relations campaign waged by the AMA against the medicare program tied to Social Security has, in my opinion, been a colossal failure. People are fed up with petty slogans that call various programs "socialistic." This term has been applied to rural electrification, workmen's compensation and even the rural free delivery. It simply does not mean anything. The public is absolutely unconvinced that the tying of medical benefits to Social Security constitutes "socialized medicine." We are making a big mistake when we include this program under the "socialized medicine" slogan. Very few doctors want real socialized medicine similar to the system in effect in Great Britain and I certainly do not object to a campaign against this type of socialized medicine. However, I do not believe that the AMA will ever convince the American people that a medicare plan tied to Social Security constitutes socialized medicine.

I have talked to hundreds of working people and union members. They see the administration's program as an opportunity for them to prepay medical care they will need in their declining years when they are not employed and when large hospital and doctor bills constitute a medical catastrophe. They see the Kerr-Mills bill as being completely inadequate. They are going to have a comprehensive medicare program tied to Social Security.

The question is whether the medical profession is going to have a hand in writing this bill or whether we are going to stand outside the council rooms shouting vain imprecations and worn-out slogans while the legislation is being drafted.

Yours truly,

John M. Samuel, M.D.



THINGS TO COME

Course in Laryngology and Bronchoesophagology

The Department of Otolaryngology, College of Medicine of the University of Illinois at the Medical Center, Chicago, will conduct a postgraduate course in Laryngology and Bronchoesophagology from March 29 through April 10, 1965. This course limited to fifteen physicians, will be under the direction of Paul H. Holinger, M.D., and will be held at the new Illinois Eye and Ear Infirmary, 1855 West Taylor Street, Chicago. Instruction will be provided by means of animal demonstrations, and practice in bronchoscopy and esophagoscopy, diagnostic and surgical clinics, as well as didactic lectures. Interested registrants will write directly to the Department of Otolaryngology, College of Medicine of the University of Illinois at the Medical Center, 1853 West Polk Street, Chicago, Illinois 60612.

Annual Meeting of the Mid-Central States Orthopaedic Society Scheduled

The Annual Meeting of the Mid-Central States Orthopaedic Society will be held March 25-27, 1965, at the Velda Rose Towers, Hot Springs, Arkansas.



PERSONAL AND NEWS ITEMS

Dr. Verser Speaks at Newport

Dr. Joe Verser of Harrisburg spoke before the Rotary Club of Newport in October, discussing socialized medicine.

Dr. Dickerson Joins State Hospital Staff

Dr. Cecil H. Dickerson, Jr. of Conway joined the State Hospital staff at the Benton unit in September. He formerly practiced at Gould.

Dr. Robinette Enters Practice in Cave City

Dr. J. M. Robinette, who entered the practice of medicine at Newark a few months ago, opened offices in the Cave City Medical Center in October and will devote a greater part of his time there.

Dr. Ashley Elected to Cancer Society Board

Dr. John D. Ashley, Jr., of Newport, has been nominated to represent his district for two years as medical district director for the Arkansas Division of the American Cancer Society.

Dr. Forestiere President of G.P. Group

Dr. A. J. Forestiere of Harrisburg was named President of the Arkansas Academy of General Practice at the Academy's annual meeting in Little Rock in October. Dr. J. P. Price of Monticello is President-elect and Dr. Thomas D. Honeycutt of Little Rock is Secretary-Treasurer.

Dr. Clements Participates in Workshop

Dr. Sam Clements, of the Child Guidance Study Unit at the University of Arkansas Medical Center, participated in a workshop of The Arkansas Association for Children With Learning Disabilities held in Little Rock in September.

Dr. Robins Moves to Chicago

Dr. R. B. Robins of Camden has moved to

Chicago where he will serve as Director of Medical Education at a Chicago hospital with supervision of the educational program of interns and residents. In addition, he will serve as house physician at the new Marina City spectacular round apartment towers at 300 N. State Street. These apartments house more than two thousand people. He will also do private practice in general medicine with offices at 30 N. Michigan Avenue. Dr. Robins plans to maintain his voting citizenship in Arkansas as well as his membership in the Arkansas Medical Society and will have affiliate membership with the Chicago Medical Society.

Dr. Wilkins Is Speaker

The Arkansas Nursing Home Association and the State Health Department were co-sponsors for a two-day meeting of nursing home owners, registered nurses and nurses' aides in Little Rock in September. Dr. Charles F. Wilkins, Jr. of Russellville, chairman of the Arkansas Medical Society Committee on Aging and president of the Arkansas Heart Association, was the featured speaker at a luncheon during the meeting.

Dr. McArthur Opens Office in Caraway

Dr. Roland Weems McArthur has announced the opening of his practice in general medicine at Caraway. He is a graduate of Lepanto High School and the University of Arkansas Medical School. He served his internship at Jacksonville, Florida.

Helena Physicians to Staff Clinic in Mississippi

Dr. W. T. Paine, of Helena, and four associates have leased a building in Tunica, Mississippi, which was remodeled for occupancy as Doctors Clinic. Tunica is across the Mississippi River from Helena.

Doctor Locates at Lavaca

Dr. Rory Murchison has opened a clinic in Lavaca. He is a former member of the U.S. Army Medical Corps and was in charge of the Fort Chaffee Post Hospital for a number of years.

Mrs. Guenthner Receives Certificate

Mrs. Leodia Guenthner of Mountain Home has passed certification examinations given by the Certifying Board of the American Association of Medical Assistants. She is the first Arkansan to become a Certified Medical Assistant. Mrs. Guenthner is medical assistant to Dr. John F. Guenthner and Dr. Benjamin N. Saltzman of Mountain Home, and has held this position for fifteen years.

Dr. Jameson Attends Meeting

Dr. Sam Jameson of El Dorado attended the Pediatric Urological Section Meeting of the

ANSWER—What's Your Diagnosis?

DIAGNOSIS: Bullous emphysema ("vanishing lung disease")

X-RAY FINDINGS: There are huge bullae bilaterally. Because of the extremely large size of these bullae the appearance resembles that of bilateral pneumothorax. All of the patient's remaining normal lung is compressed into the extreme lower portions of the chest.

ANSWER—Electrocardiogram of the Month

Rate: 145 RHYTHM: Supraventricular Tachycardia (Ectopic Pacemaker)

PR: .12 QRS: .06 QT: .28

ABNORMAL. The abnormal configuration of P waves indicate atrial depolarization is in nearly opposite direction to normal due to ectopic pacemaker. The significant Q in 1, V4, V5, V6, with ST elevation and beginning T inversion in those leads, suggest anterior infarction.

COMMENT: The patient had an anomalous right coronary artery confirmed by direct examination.

American Academy of Pediatrics in New York City in October.

Dr. Burton Elected to Board

Dr. Frank M. Burton of Hot Springs has been elected to the Hot Springs Board of Education.

Dr. Wade President of Association

Dr. H. King Wade, Jr., of Hot Springs was installed as president of the South Central Urological Association at a meeting in October at Houston, Texas. When he took over the post, he assumed the duties formerly held by his father, Dr. H. King Wade, Sr., also of Hot Springs.

Dr. Swindoll Addresses Meeting

Dr. Bryant Swindoll, director of chronic diseases at the State Health Department, spoke on teen-age smoking at a meeting of the Arkansas Joint Committee on Health at Little Rock in October.

Fifth Councilor District Met at Camden

The Fifth Councilor District of the Arkansas Medical Society met at Camden in October. Speaker at the meeting was Dr. H. Close Hesseltine, professor of obstetrics and gynecology of the University of Chicago School of Medicine. Dr. J. E. Alexander of Magnolia, district president, presided at the meeting.

Dr. Wright Honored

Dr. James W. Wright of Earle was honored in October for his attendance at athletic events at Earle High School for the last fifteen years. He received several gifts of appreciation from the citizens of Earle.

Officers Elected for Hospital

The new officers for the Professional Staff of Ouachita County Hospital were elected in October. Dr. Perry Dalton of Camden will serve as chief of staff, a post that had been filled for twelve years by Dr. R. B. Robins. Dr. Bruce Ellis will serve as vice chief of staff and Dr. L. V. Ozment will serve as secretary.

Dr. Pritchard Discusses Diabetes

Dr. Jack Pritchard of Stuttgart spoke at a meeting of the Prairie County Council of Home Demonstration Clubs in November. Dr. Pritchard discussed diabetes, its detection and control.

Dr. Linton Receives Award

Dr. A. C. Linton of Hector has completed fifty years of practicing medicine in Arkansas and has received the lapel button signifying membership in the "Fifty Year Club" of the Arkansas Medical Society.

Dr. Dodge Named to Post

Dr. Eva F. Dodge, former professor of obstetrics and gynecology at the University of Arkansas School of Medicine, has been named director of the Detroit Maternity and Infant Care Project.

Dr. Wood to Practice in Fayetteville

Dr. J. Warren Murry of Fayetteville has announced that Dr. Jack A. Wood has joined him in the practice of general surgery. Dr. Wood graduated from the University of Arkansas in 1947 and has practiced in Seminole, Oklahoma. He took a fellowship in surgery at The Ochsner Clinic in New Orleans, Louisiana, and he joined Dr. Murry in August, 1964.

RESOLUTIONS



ERADICATION OF SYPHILIS

Resolved, that the Arkansas Medical Society take official cognizance of the resurgence of syphilis and gonorrhea to the proportions of a *national health problem;* that it cooperate with the State Health Department in a comprehensive inquiry of the causative factors of this sharp increase in these diseases for which a simple cure is now available; that it take leadership in educational, diagnostic and treatment measures designed to control and *eliminate* syphilis; and that it provide *guidance* to *private* physicians in the epidemiology of the venereal diseases, and of their social implications; and that it urge physicians in private practice to avail themselves of the services of the State Health Department in the epidemiology, diagnosis, treatment, and follow up of syphilis.

OBITUARY

Dr. N. B. Daniel

Dr. Daniel died November 7th, 1964, at his home in Texarkana. He was born in Fordyce, Arkansas, June 6th, 1895. For the last thirty years he had lived in Texarkana.

Dr. Daniel was a graduate of Ouachita College and received his M.D. degree from the University of Arkansas School of Medicine in 1929. He organized the Daniel-Harrell Clinic in the Medical Arts Building at Texarkana in 1947 with his nephew, Dr. William B. Harrell. He organized and served as professor of the department of Industrial Medicine at the University of Arkansas School of Medicine 1952-53. He had served on the Board of Directors of Ouachita for many years.

He was a member of the Bowie-Miller Medical Society, Arkansas Medical Society, American Medical Association, Southern Medical Association, a fellow in the Southwestern Surgical Congress, International College of Surgeons, Scientific Council of American College of Angiology, Industrial Medical Association, and was a member and past president of the Association of Ordnance Industrial Physicians. Survivors include his wife, a son, and a step-son.

Dr. Lynwood Beasley Jones

Dr. Jones died July 24, 1964, at the age of 56, in Helena. He received his medical degree from the University of Tennessee in 1936; he was a member of the Phillips County Medical Society, the Arkansas Medical Society and the American Medical Association. He was a past president of the Arkansas Public Health Association and had served for many years as health officer in his county.

Dr. Ralph Aregood Law, Sr.

Dr. Ralph Aregood Law, Sr. died September 28, 1964, at his home in Little Rock at the age of 71. He was born in Wilkes-Barre, Pennsylvania, and had lived in Little Rock 48 years. He attended public schools in Pennsylvania and was graduated in 1919 from the Arkansas School of Medicine. He was a charter member and a former organist of St. Mark's Episcopal Church. He was a member of the Arkansas Radiological Society, Pulaski County Medical Society, Arkansas Medical Society, and the American Medical Association. Survivors include his widow, Mrs. Louise Weber Law, a son, a daughter, and six grandchildren.

Dr. W. J. B. Williams

Dr. William Jennings Bryan Williams, aged 63, of Cotton Plant, died September 29, 1964, in Rodgers Hospital in Searcy. He was born February 14, 1901, in Mack, Tenn. Dr. Williams received his degree from the University of Tennessee Medical College in 1932 and moved to Des Arc where he practiced medicine until 1941, when he moved to Cotton Plant. He served the people of Cotton Plant as the only doctor. He was a Methodist. Survivors include his wife, Mrs. Lorene Kloss Williams, and three sons.

Dr. Thomas Edwin Rhine

Dr. T. E. Rhine of Thornton died September 23, 1964, in the Dallas County Hospital, Fordyce, following a brief illness. He was the State's oldest practicing physician and one of the oldest in the nation. Dr. Rhine observed his 88th birthday on April 2nd and began his 67th year of medical practice on March 26th of this year. Until he became ill less than two weeks ago, Dr. Rhine was still driving miles to see patients and making his regular calls on the sick in the Dallas County Hospital. Born April 2nd, 1876, near Lexington, Holmes County, Miss., he moved with his parents to Cleveland County, Arkansas, in 1881 and to Dallas County in 1883. Dr. Rhine received his medical training at the Memphis School (now University of Tennessee Medical School). He began his medical practice at Thornton where he remained throughout his life except for a period during World War I when he was with the medical service of the U.S. Army overseas. Dr. Rhine estimated that he had delivered more than 7,000 babies. Dr. Rhine was one of the founders of the Southern Medical Association, a life member of the American Medical Association, an organizer of the medical societies in Dallas and Calhoun

counties and was a past president of the Ouachita County Medical Society. Survivors include his wife, Mrs. Nanita Raines Rhine; three daughters, and nine grandchildren.



PROCEEDINGS OF SOCIETIES

INDEPENDENCE

The Independence County Medical Society met at Batesville in November. The meeting was conducted by Dr. J. J. Monfort, president. Mrs. Linda Jo Chenault of Conway, a "Community Organization Specialist", was a special guest. She spoke on her work on the immunization program and recent survey of the county. Dr. Paul Gray, district councilor, reported on a recent meeting of the Council of the Arkansas Medical Society.

BAXTER

Dr. Karr Shannon, Jr., psychiatrist of Little Rock and formerly a resident of Melbourne, spoke to the Baxter County Medical Society in October at the Baxter General Hospital. He discussed the psychiatric drugs in use today, and also several mental health problems.

PULASKI

The second annual observance of Community Health Week by the Pulaski County Medical Society was announced by local society president Elvin Shuffield in October. He stated that the week was set aside to focus attention upon the outstanding medical and public health facilities existing in Pulaski County, to alert young people to the wide variety of rewarding opportunities in the medical field and to increase public awareness of medical progress.

HOT SPRING

The Hot Spring County Memorial Hospital was presented a plaque containing an engraving of Hippocrates' Oath by the Retail Merchants Association of Hot Spring County. Dr. R. V. McCray received the plaque as chief of staff of the hospital. Dr. C. R. Ellis, president of the Hot Spring County Medical Society was present for the presentation.

Seminar Held in Jonesboro

A physician's Seminar on Respiratory Diseases was held October 22nd in Jonesboro under the sponsorship of the Craighead-Poinsett Medical Society, Crittenden County Medical Society, Greene-Clay Medical Society and the Northeast Arkansas Tuberculosis Association. Dr. William L. Garner, Jonesboro, was the moderator for the meeting.

Clark County Has Special X-Ray Survey

The Clark County Medical Society has given approval to conducting a special chest x-ray survey for all adults in Clark County. The survey was jointly sponsored by the Clark County Medical Society, the Clark County Tuberculosis Association, and the Clark County Health Department, with the Arkansas Health Department furnishing the mobile x-ray unit.

Crawford County Medical Society

The Crawford County Medical Society met in regular monthly dinner session on November 17th at Bomontes Cafe in Van Buren, Arkansas. The guest speaker was Dr. L. A. Whittaker of Fort Smith who spoke on Hypnosis. Wives of the Doctors were guests at this meeting.



Auxiliary Officers Elected

The 1964-65 officers of the Woman's Auxiliary to the Arkansas Medical Society are: Mrs. James W. Branch of Hope, president; Mrs. Charles F. Wilkins of Russellville, president-elect; Mrs. Aaron Modelevsky of Jonesboro, first vice president; Mrs. H. Wallace Thomas of Dermott, second vice president; Mrs. C. Lynn Harris of Hope, third vice president; Mrs. L. A. Whittaker, Jr. of Fort Smith, fourth vice president; Mrs. Robert H. Atkinson of Hot Springs, recording secretary; Mrs. Joe B. Scruggs, treasurer; Mrs. John R. Wassell, corresponding secretary; Mrs. Frank Padberg, historian; Mrs. G. W. Garrison, historian emeritus; Mrs. Jim McKenzie of Hope, parliamentarian; Mrs. Harold Langston, publicity secretary; Mrs. W. G. Selakovich and Mrs. Melvin R. McCaskill of Little Rock, editors, Ark-Map; Mrs. T. D. Honeycutt, roving reporter.



NEW MEMBERS

DR. CLEVELAND TURNER, JR., is a new member of Phillips County Medical Society. He is a native of Belzoni, Mississippi, and he received his preliminary education from Millsaps College at Jackson, Mississippi. He then enrolled at Tulane University Medical School from which he was graduated in 1956. He practiced at Tupelo, Mississippi, for one year. Dr. Turner's specialty is general surgery and his address is Helena, Arkansas.

A new member of the Pulaski County Medical Society is DR. STEWART A. FISH. He was born at Benton, Illinois, and he received his premedical education from Virginia Polytechnic Institute and the University of Virginia. He was graduated from the University of Pennsylvania Medical School in 1949 and he served his internship at the University of Pennsylvania Hospital. Dr. Fish practiced for seven years in Dallas, Texas. His specialty is obstetrics and gynecology and he is with the Department of Obstetrics and Gynecology at the University of Arkansas Medical Center in Little Rock, Arkansas.

Mississippi County Medical Society announces that DR. WADE A. HART is a new member. He is a native of Jonesboro, Arkansas, and received his pre-med at the University of Arkansas. He was graduated from the University of Arkansas School of Medicine in 1957. He served his internship at St. Vincents Hospital in Little Rock, Arkansas. Dr. Hart is a radiologist and his office address is Chickasawba Hospital in Blytheville, Arkansas.

DR. TED E. ASHCRAFT is a new member of the Pope-Yell County Medical Society. He was born at Little Rock and he received his preliminary education from Arkansas State Teachers College. He then enrolled at the University of Arkansas Medical School from which he was graduated in 1962. He completed his internship at the University of Arkansas Medical Center. He served in the U. S. Air Force from 1953 until 1957. Dr. Ashcraft's specialty is general medicine and surgery and his address is 809 West Main in Russellville, Arkansas.

Mississippi County Medical Society announces that DR. JAMES D. RANKIN, JR. is a new member. He is a native of Elaine, Arkansas, and received his preliminary education from Hendrix College at Conway, Arkansas. He received his M.D. degree from the University of Arkansas Medical School in 1961. Dr. Rankin's office address is 307 West Hale in Osceola. He is a general practitioner.

DR. SYBIL R. HART is a new member of the Mississippi County Medical Society. She was born at Flippin, Arkansas, and received her pre-medical education from the University of Arkansas. In 1957, she received her M.D. degree from the University of Arkansas Medical School. She practiced at Norton Air Force Base, California, from 1959 until 1961 and at Arkansas Baptist Hospital in Little Rock from 1961 until 1964. Dr. Hart is a pathologist in Blytheville, Arkansas.



BOOK REVIEWS

CLINICAL NEUROLOGY, by Frank A. Elliott, M.D., F.R.C.P., Chief of Neurology, The Pennsylvania Hospital, Professor of Clinical Neurology, University of Pennsylvania School of Medicine, pp. 688, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1964.

This textbook of neurology is organized along conventional lines. It is a well written book but the reviewer would prefer to have more illustrations and charts. The section on vascular diseases of the brain and spinal cord is adequately covered but it would be well to expand the newer means of diagnostic examinations.

This book is recommended as a good textbook for medical students, interns and practicing physicians. AK

TEXTBOOK OF PEDIATRICS, Eighth Edition, by Numerous Authors, pp. 1636, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1964.

This *Textbook of Pediatrics* is now in its 8th edition. It is improving over the previous editions. It is an outstanding text on pediatric diseases. It is comprehensive. It contains some reference tables. There are a limited number of pictures and illustrations. In general, this text is outstanding and is heartily recommended to all members of the profession and medical students. AK

DISEASES OF METABOLISM, Detailed Methods of Diagnosis and Treatment, edited by Garfield G. Duncan, M.D., Professor of Medicine, University of Pennsylvania; Director of Medical Divisions, Pennsylvania Hospital and The Benjamin Franklin Clinic, Fifth Edition, illustrated, pp. 1551, published by W. B. Saunders Company, Philadelphia and London, 1964.

This textbook has become a medical classic and is the outstanding text on this subject published in this country. It is authoritative and comprehensive. Different sections are published by different authors and the book has been prepared under the editorship of Garfield G. Duncan, M.D., who is Professor of Medicine at the University of Pennsylvania. The book does not contain many charts or illustrations although the number is adequate. There are excellent references. This book is heartily recommended to the medical student, house officer and practicing physician. AK



Clinical and Bacteriological Studies of Massive Penicillin G Doses in Gram Negative Infections

L. Weinstein (School of Medicine, Tufts University, Boston), P. L. Lerner, and W. H. Chew, *New Eng J Med* 271:525 (Sept 10) 1964

The role of penicillin G in the management of serious gram negative bacillary infections was examined from both the microbiological and clinical standpoints. The bulk of strains of *Eschericia coli, Aerobacter aerogenes, Alcaligenes fecalis, Salmonella, Shigella,* and indole negative *Proteus mirabilis* were found to be inhibited by concentrations of penicillin G ranging from 2.5 to 625 units/ml. Pseudomonas and indole producing *Proteus* were suppressed only by concentrations of 5,000 to 10,000 units/ml. Massive doses of intravenous penicillin G (20 to 60 million units/day) given to patients with severe gram negative bacterial infections resulted in bacteriological and clinical cure in the majority of cases. Peak serum concentrations of penicillin G as high as 737 units/ml were recorded.. The only untoward effects noted were related to cerebral irritation and consisted of generalized seizures, appearing only in patients with renal failure or with underlying central nervous system disease. Reduction in the dose of antibiotic often eliminated this problem. The bacteriological and clinical experience in this study suggest redefinition of the "sensitivity" of bacteria to penicillin G, so that, on the basis of tube-dilution determinations, the organisms may be classified as sensitive, inhibited by 78 units/ml or less; moderately sensitive, suppressed by 156 to 625 units/ml; and resistant, sensitive to more than 625 units/ml.

TUBERCULOSIS  ABSTRACTS

Sponsored by Arkansas Tuberculosis Association

DRUG RESISTANCE IN PULMONARY TUBERCULOSIS

Analysis of the degree of bacillary resistance to the three commonly used drugs in tuberculosis therapy points up the clinical significance of even a low degree of resistance and the importance of susceptibility tests capable of detecting resistance, however slight.

An attempt has been made to determine whether bacteriologic, roentgenographic, or clinical deterioration occurs in patients with tubercle bacilli of low degrees of resistance to drugs in use as well as in patients with highly resistant bacilli.

The analysis was carried out retrospectively. All patients with pulmonary tuberculosis whose names were brought to the notice of the research laboratory from 1952 through 1957 were included, provided there was definite evidence of resistance to at least one of the standard drugs, there had been at least three months' treatment with standard drugs, and the bacteriologic, roentgenographic or clinical information was available.

A separate analysis was made for each of the three standard drugs — streptomycin, PAS, and isoniazid.

For each patient the degree of drug resistance was classified as high, variable, or low. Seventy patients who had 187 treatment courses were analyzed.

In 91 per cent of the treatment courses, the pretreatment roentgenogram showed far-advanced disease. In 71 per cent, the disease was considered chronic; in 22 per cent, chronic with acute spread; and in 3 per cent, acute. The mean duration of treatment per course was 8.23 months. Only treatment given while the patient was in the hospital has been considered.

For treatment courses including streptomycin and PAS, the duration of treatment at risk of change was somewhat greater in patients with organisms of a high degree of resistance than in those whose bacilli remained at a low degree of resistance; that is, those in the high resistance group had a longer period of treatment during which deterioration could occur. With isoniazid, the longest duration at risk was in the combined low-degree groups.

DETERIORATION INCIDENCE

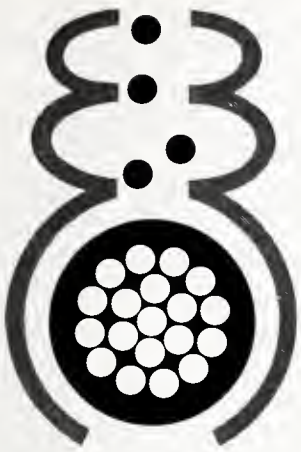
Bacteriologic deterioration was demonstrated in 12 of 16 patients with a high degree of resistance to streptomycin, in 5 of the 6 patients with organisms of a variable degree of resistance, and in all 7 patients at risk whose organisms were of a low degree of resistance. The incidence of deterioration by at least one criterion (bacteriologic, roentgenographic, or clinical) was 68 per cent in the high-degree group, 60 per cent in the variable group, and 82 per cent in the low.

Of the 19 patients at risk with a high degree of resistance to PAS, bacteriologic deterioration was demonstrated in 16. The numbers at risk in the variable and low-degree groups were small, the incidence of deterioration being 3 of 3 and 2 of 2, respectively. The incidence of deterioration by at least one criterion was 68 per cent in the high-degree group, 83 per cent in the variable group, and 75 per cent in the low-degree group.

Of the 36 patients at risk with organisms of a high degree of isoniazid resistance, 29 showed bacteriologic deterioration, compared with 2 of 4 in the variable group, and 13 of 16 in the low-degree group. Twenty-three of the 66 patients in the high-degree group deteriorated clinically, 3 of 8 in the variable group, and 7 of 22 in the low-degree group. The incidence of deterioration by at least one criterion was 70 per cent in the high-degree group, 50 per cent in the variable group, and 64 per cent in the low-degree group. The incidence of *improvement* when the organisms were resistant to all of the drugs was 41 per cent, 50, and 29 for the three groups.

The incidence of deterioration was therefore at least as high in patients with organisms of a

SHEILA M. STEWART, PH.D., and J. W. CROFTON, M.D. *The American Review of Respiratory Diseases,* June, 1964.



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atropine sulfate 0.025 mg.

- lowers motility promptly
- relieves spasm promptly
- stops diarrhea promptly

Lomotil fulfills the first order of treatment in most patients with diarrhea — prompt symptomatic control.

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The recommended initial *adult* dosage is two tablets (2.5 mg. each) three or four times daily, reduced to meet the requirements of each patient as soon as the diarrhea is controlled. Maintenance dosage may be as low as two tablets daily. *Children's* daily dosage (in divided doses) varies from 3 mg. for a child of 3 to 6 months, to 10 mg. for one 8 to 12 years of age.

cautions and side effects:

Lomotil is an exempt narcotic; its abuse liability is low and comparable to that of codeine. Recommended dosages should not be exceeded. Side effects are relatively uncommon but among those reported are gastrointestinal irritation, sedation, dizziness, cutaneous manifestations, restlessness and insomnia. Lomotil should be used with caution in patients with impaired liver function and in patients taking addicting drugs or barbiturates.

Lomotil is a brand of diphenoxylate hydrochloride with atropine sulfate; the subtherapeutic amount of atropine is added to discourage deliberate overdosage.

SEARLE

Research in the Service of Medicine

low degree of resistance to any of the three drugs as in those with highly-resistant bacilli.

Improvement occurred in a number of patients when their bacilli were still susceptible to at least one of the drugs and in some patients even when their bacilli were resistant to all the drugs in use. The improvement was more frequently shown by clinical criteria than by roentgenograph.

If bacilli of a low degree of resistance are of less clinical significance than those of a high resistance, it might be expected that deterioration associated with organisms of a low degree of resistance would occur later. However, in 10 of the 34 courses analyzed, deterioration occurred before the detection of resistance to streptomycin; in 8 of 23, deterioration occurred before the demonstration of resistance to PAS; and in 10 of the 63 courses which included treatment with isoniazid, deterioration occurred before resistance to that drug.

In 7 patients treated with drugs in adequate combinations, organisms were shown to be of a low degree of resistance to at least one drug and fully susceptible or of a low degree of resistance to at least one other before the start of treatment. Failure under treatment showed that the low degrees of resistance recorded before treatment were clearly of clinical significance. Two of these patients were primarily infected with bacilli resistant to one of the standard drugs.

CHOICE OF TEST IMPORTANT

The evidence from the present analysis shows that organisms which are only slightly less susceptible to streptomycin, PAS, or isoniazid than normal strains are as important clinically as those which are highly resistant. Deterioration during treatment frequently occurred in patients harboring bacilli of a low degree of resistance. It is therefore of primary importance that any tests used for the detection of drug resistance should detect these organisms with low degrees of resistance.

The main problem in assessing the efficiency of a susceptibility test is that there are many strains of bacilli in which resistance will be detected by virtually any method of testing. But there are others in which resistance is not detected if unsatisfactory tests are used.

Even a slight decrease in drug susceptibility in strains of tubercle bacilli is of clinical significance.

Gastrointestinal Complications of Collagen Diseases

G. D. Couris, M. A. Block (2799 W Grand Blvd, Detroit), and C. E. Rupe, *Arch Surg* 89:695 (Oct) 1964

Perforation, massive hemorrhage, and infarction of the gastrointestinal tract as complications of collagen, diseases challenge the surgeon in making an early diagnosis, emergency surgical judgment, and in providing postoperative care. Using strict criteria for the diagnosis of the collagen disease and the complications, 20% of 52 patients with essential polyangitis, 10% of 52 patients with dermotomyositis, and 2% of 231 patients with systemic lupus erythematosus seen in our institution during the past ten years developed one or more of these complications. The incidence for the entire group of 342 patients was 6%. Twenty patients developed 25 complications with perforation occurring in 44%, hemorrhage in 32%, and infarction in 20%. These complications, occurring separately or in combinations, were associated with mucosal ulcerations, intraperitoneal abscesses, peritonitis, intestinal obstruction, and fistula formation. All three types of complications were equally distributed in patients with polyangitis, but perforation was more common in patients who had dermatomyositis and systemic lupus erythematosus. Only about half of those with hemorrhage or infarction were receiving steroids. Patients with collagen diseases may develop complications in the absence of steroid therapy.

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Vol. 61 No. 9

FORT SMITH, ARKANSAS

89TH ANNUAL SESSION
ARKANSAS MEDICAL SOCIETY
LITTLE ROCK, ARKANSAS, APRIL 25-28, 1965

AMYTAL TAKES THE EDGE OFF DAYTIME ANXIETY AND TENSION

Amytal is a moderately long-acting barbiturate that takes the edge off daytime anxiety and tension without significant change in mood and attitude. Since Amytal is metabolized in the liver within twenty-eight hours, overlapping of effect is minimized, and renal damage does not constitute an absolute contraindication to the drug.

Side-Effects: Idiosyncrasy or allergic reactions to the barbiturates may occur.

Precautions and Contraindications: Amytal should be used with caution in patients with decreased liver function, since a prolongation of effect may occur. Administration in the presence of uncontrolled pain may produce excitement. Warning—May be habit-forming.

Dosage: Doses should be individualized for each patient. The usual adult sedative dosage ranges from 30 mg. (1/2 grain) to 50 mg. (3/4 grain) two or three times daily.

Additional information available to physicians upon request. Eli Lilly and Company, Indianapolis 6, Indiana.

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DILANTIN (diphenylhydantoin) can help your epileptic patient to earn a livelihood...to prove his worth...and to share in the daily give-and-take as a full-fledged member of the workaday world.

Indications: Grand mal epilepsy and certain other convulsive states.

Precautions: Toxic effects are infrequent: allergic phenomena such as polyarthropathy, fever, skin eruptions, and acute generalized morbilliform eruptions with or without fever. Rarely, dermatitis goes on to exfoliation with hepatitis, and further dosage is contraindicated. Eruptions then usually subside. Though mild and rarely an indication for stopping dosage, gingival hypertrophy, hirsutism, and excessive motor activity are occasionally encountered, especially in children, adolescents, and young adults. During initial treatment, minor side effects may include gastric distress, nausea, weight loss, transient nervousness, sleeplessness, and a feeling of unsteadiness. All usually subside with continued use. Megaloblastic anemia, aplastic anemia, leukopenia, granulocytopenia and pancytopenia have been reported. Nystagmus may develop. Nystagmus in combination with diplopia and ataxia indicates dosage should be reduced. Periodic examination of the blood is advisable.

DILANTIN (diphenylhydantoin sodium) is supplied in several forms including Kapseals® containing 0.1 Gm. and 0.03 Gm.

*Roseman, E.: *Neurology* **11**:912, 1961. 33664

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No untoward side effects have been reported in 12 years of clinical use.

Literature on indications and dosage available on request.

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IMMUNIZATION — 1964*

Sarah H. Sell, M. D.

Introduction

Ours is a wonderful age for medical care. Each year greater numbers of diseases are being placed on the preventable list and interest in them is shifting away from treatment toward prevention. This is especially true in the field of infectious diseases. It is necessary to keep apace of the dynamic advances which require constant readjustment of our schedules for immunizations. For example, the recent availability of a choice of virus vaccines for poliomyelitis and measles in the form of attenuated, live, as well as killed, virus preparations has made us conscious of the need to know exactly how to use each one.

The present report will discuss briefly some of the old friends as well as some of the recent advances in vaccines. Then we will add the pieces and present some schedules for your consideration.

Tetanus

Tetanus which is an entirely preventable disease today, still occurs in the U. S. Over half of the cases are reported in adults. The Surgeon General as well as the American Medical Association is urging an all-out campaign to immunize the entire population. The toxoid which is available now is the most nearly perfect of the immunizing agents in that the side reactions after administration are low and the duration of protection is long. The antigen stimulates antibodies against the toxin rather than the whole bacterial organism. The presence of circulating antitoxin in the tissue at the time of infection usually prevents disease. In other words, if the toxin can be quickly inactivated, the infection *per se* is of small consequence to the patient.

The choice of immunizing antigens includes the "depot" form—which consists of alum precipitated, aluminum hydroxide or aluminum phosphate adsorbed toxoid—and the fluid toxoid. The relatively recent availability of the more dilute fluid or "adult type" toxoid has reduced the unpleasant reactions from repeated injections. Intradermal administration, especially for booster doses has been recommended. This preparation is available either as a single antigen or combined with diphtheria.

Diphtheria

Since the general use of toxoid over the past 20 years, the incidence of diphtheria has declined remarkably. However the case fatality rate has been the same. In other words, prevention, not cure, has been successful. Since the herd immunity is dropping, boosters are now required at later ages than previously.

A hypersensitivity to diphtheria toxoid can be developed by repeated exposure to the live bacilli or by repeated injections of the toxoid. For this reason, primary immunization of adolescents or adults in the past has necessitated a skin test for hypersensitivity (Maloney or Zoeller) before administration of the antigen. The recent development of fluid toxoid which utilizes small amounts of antigen has smoothed out this rough situation and made it easy to immunize "older" patients as well as to maintain immunity throughout life by booster doses. The combination of tetanus toxoid, in the usual amounts, with dilute diphtheria toxoid (labelled "TD-adult type") is a recent advance. This dilute type of toxoid has been recommended to be used in children after age 8 years (1-4).

Pertussis

Pertussis vaccine has been used for many years but only relatively recently the dependability of the products has been improved by standardization. Twelve N.I.H. units given in 3 injections are recommended for satisfactory immunization. The severity of whooping cough in young infants and the high mortality rate in the early months of life have led to the strong recommendation that primary immunization should be begun at 6-8 weeks of age (1, 4).

*From the Department of Pediatrics, Vanderbilt University School of Medicine. Read at the 17th Annual Meeting of the Arkansas Academy of General Practice, Little Rock, Arkansas, October 7-8, 1964.

Combined DPT

As a rule, for primary immunization of young children, the "depot" combination of diphtheria and tetanus toxoids with pertussis vaccine is considered preferable to fluid mixtures for the following reasons:

1. More prolonged antitoxic immunity to diphtheria and tetanus is induced.

2. Greater immunological response against pertussis in early infancy is stimulated.

3. The lower protein content and slower adsorption minimizes systemic reactions.

However, in adults, in whom there is no question of pertussis immunization, the fluid toxoid is recommended for reasons already discussed (4).

Poliomyelitis

The choice of vaccines now available include killed-virus (Salk-type) as well as live attenuated virus (Sabin type). Of the latter, there are two forms licensed in the United States: monovalent, types 1, 2 or 3, as well as a single trivalent preparation. For primary immunization by community-wide campaigns, the oral monovalent vaccines have been recommended. The main reason for this choice resides in the fact that type 1 is the most frequent type found in the U. S. and therefore protection is most needed. It is this type which has been the biggest problem in the trivalent mixture. Therefore, it has been suggested that monovalent types be given for primary immunizations of large populations but the trivalent forms may be used for make-up doses that were missed during the campaign and for primary immunizations of infants after the community has been cleared of wild poliovirus.

A booster—or "clean-up" dose—of trivalent type vaccine is suggested for children 1-2 years of age. If there were poor responses to the primary doses due to interference by maternal immunity or by infection with other enteric viruses, the later trivalent dose would fill in. A booster, trivalent dose has been recommended for pre-school children at age 6. It is not known exactly how long immunity will last. So far, at least, there is no evidence that adults need boosters (4, 5).

Measles

The recent availability of measles virus vaccine has stimulated a great deal of interest. The susceptibles in the population are mostly children under age 15 years. The whole question as to the best way to immunize children in all instances is still undergoing active exploration. Out of this fluid situation, however, some facts appear to be evident.

In the first place, the live virus vaccine will not "take" in the presence of detectable antibody which is naturally acquired, e.g., in young infants who have inherited immunity from their mothers or in children who have had wild measles, even though sub-clinical or mild. The presently available form of Enders attenuated strain, used alone in susceptible children, reportedly caused febrile reactions in 85% of the subjects; but when given with calculated doses of gamma globulin, few unpleasant reactions occurred. If the two were mixed in the same syringe, the virus was neutralized and no protection ensued; however by giving them at different sites, the reactions to the virus vaccine were reduced and immunity resulted. A further attenuated strain (Schwarz), under investigation, promises to give good protection and few side reactions without the use of gamma globulin. This is not, yet, licensed and therefore is not available.

The latest, potent killed-virus vaccines (formalin-killed, aluminum adsorbed) have stimulated good antibody responses, but the duration of protection is thought to be limited. Children given two or three doses of killed-virus vaccine then challenged with the Enders strain of live virus had few unpleasant reactions to either vaccine and uniformly developed good antibody titres. When tested by exposure to epidemics of measles, the protection was good.

The present recommendation calls for live attenuated virus vaccine (Enders) plus gamma globulin. Since it will not "take" in very young infants, our schedule calls for this injection at or after age 9 months. However, there is some evidence that young infants respond to killed virus vaccine and when later challenged with Enders alone get good immunity without unpleasant reactions.

If there is any question about a child's susceptibility to measles, e.g., after suspected measles, it might be best to give the vaccine for protection. If the child is susceptible, he will be protected. If he already has immunity the vaccine will be neutralized and cause no reaction.

In all of the reports of thousands of children immunized with either killed or live virus vaccine, no cases of measles encephalitis have been reported (6-11).

Rabies

After exposure to a rabid animal, active immunization to rabies has been recommended. The recently developed avian vaccine, prepared in duck embryos (Lilly) has been shown to give good antibody response and far fewer serious reactions than the Semple—or brain tissue containing-vaccine. In severe exposures, particularly around the head and neck antirabies serum is urged in addition. The suggested dose, to be given after suitable tests for sensitivity of the patient to the serum, is 1000 units per 40 pounds of body weight. The active immunization should be started immediately with 14 daily doses of vaccine plus two booster doses at 10 and 20 days after the last daily dose. The local treatment of the wounds might include injection of part of the dose of antiserum into the tissues beneath the injury.

Prophylactic rabies immunization with duck embryo rabies vaccine is now recommended for persons who have high exposure rate—e.g., veterinarians, dog catchers, etc. (12).

Smallpox

This dread disease has been virtually stamped out of our country for many years. But modern air travel now makes it possible for a patient who was exposed to smallpox in a distant land to reach almost any part of the earth during his incubation period. For this reason, the Surgeon General of the U. S. Public Health Service has recommended that all medical personnel be revaccinated every three years. The American Medical Association recommends that all other persons be revaccinated within five years.

The recent development of a disposable, plastic scarifier by Kravitz (manufactured as "Mono-Vac") is a new device to introduce the standard vaccine (14).

It is well to be reminded that vaccination is accomplished by a living virus preparation and has strong contraindications too. Open skin lesions, such as eczema or burns in patient or sibling; blood dyscrasias, particularly leukemia or agammaglobulinemia; and therapy with corticosteroid hormones constitute the most important (4).

Typhoid

The controversy over whether typhoid vaccine is effective in preventing illness with this infection has raged for many years. Within the past few years W.H.O. workers reported the results of a carefully controlled field trial in an endemic area of Yugoslavia. The heat-killed, phenonl-preserved vaccine was about 65-70% effective in the overall population. However, analysis by age groups revealed that the best results were obtained in the 5-14 year group with very little protection of adults. Reasons for this have not been completely explained (2, 15).

Suggested Schedule for Active Immunization of Infants and Children

To add all of this together and work out a scheduled program which can be applied to a young infant is our next consideration.

At the present, it is recommended that the patient receive only one living-virus vaccine at one time. DTP or killed-virus may be given at this time however without interfering with the immune reactions. Chart I offers a suggested schedule which includes the new as well as the necessary old procedures in such a way that good well-baby care can be given at the same time.

DTP should be started early, especially the pertussis protection. The live poliovirus vaccine can be given at this time, too. The present recommendations for young children calls for either monovalent or trivalent, Sabin-type vaccine during the early months of life followed by a booster at age 15 months. The importance of this booster is stressed since some young infants inherit enough maternal antibody to neutralize the vaccine virus and thereby miss getting permanent protection. The "clean-up" dose should fill in the needed deficiencies which will have occurred.

Measles vaccine, at 9 months of age, allows time for the decay of maternally transferred immunity. The presently available product is recommended for use with simultaneously administered standardized gamma globulin.

Smallpox vaccination, with live vaccinia virus, can be given at the time of the 12 month check-up.

At 15 months, the DTP booster is needed. The "clean-up" polio-vaccine can be given conveniently at this time.

At 2 years skin tests need to be checked.

At 4 years, DTP needs to be recalled. This is a good time for skin tests too.

At 6 years, the preschool bout of immunizations takes place with smallpox vaccination, typhoid series, and a dose of trivalent oral poliovirus vaccine.

Then every 4 years, tetanus and diphtheria toxoid as well as smallpox vaccination should be given. After the age of 8 years, the adult type, fluid toxoid is recommended.

Of course, there will be circumstances under which there must be variation of this suggested schedule. For example, a child with heat rash or eczema could not be vaccinated until the skin cleared. A new schedule would then need to be tailored for him. As another example, one might prefer to use a measles schedule of two doses of killed-virus, then challenged with the live-virus vaccine. In that case, the killed-virus product could be given at the same visits as the live poliovirus.

Influenza

Last winter, to the great dismay of many, the Influenza vaccine failed to protect great numbers of patients who had taken it. The virus had "drifted" again and illness was not prevented by immunity against the older strains. The vaccine available now, however, contains the newer antigens of Type A as well as B. It is a killed-virus product and affords brief protection. It is recommended for use in high risk personnel and chronically ill patients. If an epidemic appears to be imminent, the general public may be urged to take it.

Immunization is, indeed, a dynamic area of medical practice. Many of the things so carefully worked out in this schedule will be changed as more knowledge accrues and better products are approved. The improvements will be coming along so rapidly there will be no time to develop a complacent attitude about any of it.

Chart I.

SUGGESTED SCHEDULE FOR ACTIVE IMMUNIZATION OF INFANTS AND CHILDREN*

Immunization may be started at any age. The immune response is limited in a proportion of young infants and the recommended booster doses are designed to insure or maintain immunity. Protection of infants against pertussis should start early. This schedule is intended as a flexible guide which may be modified within certain limits to fit individual situations.

Age	*Preparation*
2 months	DTP, Oral Polio—Type I—or Trivalent**
3 months	DTP; Oral Polio—Type III
4 months	DTP; Oral Polio—Type II or Trivalent
9 months	Measles Vaccine
12 months	Smallpox+; Tuberculin & Histoplasmin Skin Tests
15 months	DTP; Oral Polio—Trivalent
2 years	Tuberculin & Histoplasmin Skin Tests
4 years	DTP; Tuberculin & Histoplasmin Skin Tests
6 years	Smallpox; Typhoid, Oral Polio-Trivalent, Tuberculin & Histoplasmin Skin Tests
8 years	TD
12 years	TD; Smallpox
16 years	TD; Smallpox

After 16 years of age, smallpox revaccination and tetanus toxoid booster doses should be repeated every five years.

DTP = Diphtheria-Tetanus-Pertussis combined
TD = Tetanus-Diphtheria toxoid (adult type)
** = Trivalent oral polio needs only 2 doses; suggest age 2 & 4 months. Booster at 15 months as "clean-up", for all patients.
\+ = May give smallpox at 5 months or 15 months, if desired.

*Adapted from the Recommended Schedule of the Report of the Committee on the Control of Infectious Diseases, 1964, Published by the American Academy of Pediatrics, Box 1304, Evanston, Illinois, $1.50 per copy.

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ADDENDUM

Since this paper was written, the Report of Special Advisory Committee on Oral Poliomyelitis Vaccines to the Surgeon General of the United States Public Health Service (J.A.M.A. *190*: 49, 1964 (5 October) has been published). It was recommended that monovalent vaccines be given in the following order: II, I, III—with 8 weeks interval between II and I. However, in young infants, the suggested "clean-up" dose was considered adequate to make up for any interference which might occur if the doses were given with the DPT injections at 4-6 week intervals.

The Use of Steroids in the Treatment Of Hay Fever and Bronchial Asthma**

Thomas G. Johnston, M.D.*

Steroids are rarely needed in the treatment of uncomplicated hay fever. However, for patients who fail to respond to hyposensitizing injections and the usual symptomatic medications they have proven most helpful. In patients with rhinitis medicamentosa due to nose drops, sprays, or inhalers they are very effective in offsetting the "rebound" effect caused by the topical vasoconstrictors. Nasal polyps with broad bases generally shrink during steroid therapy, but of course will usually recur when the effect wears off.

Our choice of steroid is triamcinolone (Aristocort or Kenacort) in the four milligram size. We use short term courses of twelve to thirty tablets. We believe it is best to give a large dose to obtain relief quickly and then rapidly decrease the dosage to lessen the likelihood of depressing the adrenals. In addition to triamcinolone we also use betamethylprednisolone (Celestone) 0.6 milligrams in the same manner. Decadron (dexamethasone phosphate) four milligrams per c.c. is oftentimes helpful. This aqueous solution is relatively painless and should be given intramuscularly.

In severe intractable hay fever Kenalog Acetonide Suspension 40 milligrams per c.c. (triamcinolone acetonide) has proven to be very effective. Ordinarily we use sixty milligrams (1½ c.c.) given intramuscularly preferably in the buttocks. This generally allows one to be able to play golf, fish, or hunt, or carry on their hobbies during the pollinating season with little, if any trouble. I do not believe, however, that this blocking of the symptoms in any way prevents the development of bronchial asthma, and would like to emphasize that steroids are not a substitute for good allergic management and/or hyposensitizing injections.

Steroids have their greatest use in bronchial asthma. They have been most helpful in severe intractable asthma and status asthmaticus. When the usual measures fail to give relief the cause is usually an inflammatory reaction in the bronchial mucous membrane. In these cases steroid therapy is most beneficial.

Since the advent of steroids, hospitalization of our asthmatics is relatively rare. I believe that prompt relief of bronchial asthma helps prevent dehydration and inspissation of the thick gelatinous material which accumulates in the bronchi of asthmatics.

As in the case of hay fever the steroids should be used only when the usual measures fail. These cases are nearly always of the "intrinsic" or "infectious" type. Failure to respond to epinephrine and the usual measures indicate a probable inflammatory response in the mucous membrane or severe dehydration. Such cases usually respond dramatically to steroid therapy.

I have found triamcinolone (Aristocort or Kenacort) to be the most effective steroid tablet per tablet in the treatment of bronchial asthma. In an asthmatic we usually begin with two four milligram size tablets the first dose, followed by one tablet every three hours until relieved, and one tablet every six hours for two days, then one tablet every eight hours until a course of twelve to thirty tablets have been taken. We also use Celestone (betamethylprednisolone) the same way with good results. Some people feel, however, that tapering the dosage is not necessary.

Injectable Decadron (dexamethasone phosphate) four milligrams per c.c. given IM has been found to be a valuable adjunct.

At times, hydrocortisone phosphate, 100 milligrams per 2 c.c. intravenously, has proven helpful. Incidentally, in the use of this material the patient may complain of a "flushed" feeling, particularly if it is administered rapidly.

These drugs are not a panacea for asthma. They have never "cured" a case and they never will. They should be used only when the usual measures fail. Such drugs are not a substitute for good allergic management. Nor do they act rapidly

*From the Johnston Allergy Clinic — 5512 W. Markham, Little Rock, Ark.

**Delivered before the American College of Allergists, Miami, Fla., March 1964.

enough to relieve an acute asthmatic attack. An individual with severe asthmatic symptoms not relieved by the usual measures may need to be hospitalized.

The steroids should be used only after the judicious use of epinephrine in anaphylactic shock. We prefer Decadron Phosphate (dexamethasone) four milligrams per c.c. IM and Hydrocortisone Phosphate 100 milligrams per two c.c. IV. These agents take a good while to act, and consequently do not act quickly enough in the acute anaphylactic shock. Epinephrine is still the drug of choice.

We do not advocate continuous therapy with steroids, although at times this appears necessary. In these cases one should try to get by with as little steroid as possible.

One method of cutting down on the unwanted metabolic effect is to give the medication every 48 hours rather than continuously. By using intermittent dosage there is less likelihood of depressing the pituitary adrenal axis, according to Halter, Reddy, and Thorn of the Harvard Medical School. These investigators found that 2.5 to 7.5 milligrams of Prednisolone given four times daily significantly reduce both 17-hydroxycorticoid and 17-ketosteroid excretion, while as much as 80 to 100 milligrams of Prednisolone every other day does not. This retained ability of the pituitary adrenal axis to respond to stress (or ACTH) is a major advantage of intermittent steroid therapy.

Keratoconjunctivitis Resulting From Sap of Candelebra Cactus and Pencil Tree

J. I. Crowder (1638 NW Tenth Ave, Miami, Fla) and R. R. Sexton, *Arch Ophthal* 72:476 (Oct) 1964

A severe keratoconjunctivitis and associated uveitis were noted to occur with the accidental instillation of the latex of candelabra cactus *(Euphorbia lactea)* or pencil tree *(Enphorbia tirucalli)* into the eye. A delay of approximately 12 hours was noted before the onset of marked conjunctival and lid edema, subconjunctival hemorrhages, erosion of corneal epithelium, corneal edema and a heavy anterior chamber, and vitreous haze. This cleared completely by two to three weeks. A study on 28 dog eyes was done, using the latex of these same plants. A similar clinical response was found to occur with the spontaneous remission of clinical signs in four to 21 days. Histological studies on the dog eyes showed vascularization of peripheral corneal stroma and polymorphonuclear leucocyte infiltration. A similar latex is found in many related ornamental plants—ie., poinsettia (*Euphoriba pulcherrima*) and in the crown of thorns (*Euphorbia milii*).

Lesions Mistaken for Malignant Melanoma of the Posterior Uvea

A. P. Ferry (Ophthalmic Pathology Branch, Armed Forces Institute of Pathology, Washington, DC), *Arch Ophthal* 72:463 (Oct) 1964

In a series of 7,877 enucleated eyes, there were 529 cases in which the eye had been removed because of a clinical diagnosis of malignant melanoma of the ciliary body or choroid on the basis of an ophthalmoscopically visible lesion. Upon pathological examination, malignant melanoma was not found to be present in 100 (19%) of these eyes. Retinal lesions accounted for two-thirds of the misdiagnoses. Lesions of the ciliary body and choroid accounted for one-fourth of the errors, and the remainder were on the basis of lesions of the vitreous body and optic nerve head.

Growth and Development*

Victor C. Vaughan, III, M.D.**

In discussing certain trends in growth and development which have emerged in recent years, I might have chosen as subtitle something like "The Biologic Basis For A Better World," since I propose to review some aspects of social behavior and social organization which may have major relevance to the predicament of modern man. In these areas of growth and development new discoveries and insights derived from animal as well as human observation bid fair to give us new directions and hope in coping with long-time problems.

The first item of interest will be the phenomenon known as *imprinting*. Imprinting has long been casually observed without becoming the focal point of scientific inquiry. Much of the new interest surrounding it owes to the work of the Austrian biologist, Konrad Lorenz, one of whose classical observations was that when he hatched a number of geese under conditions where he was their sole living contact for the first few hours of life, these goslings, when shooed out of the house to rejoin their mother goose, preferred to follow Lorenz about the yard rather than their natural parent. Similar imprinting has begun to be substantially studied now in many animals and represents a very general phenomenon of social orientation. One of the oldest examples has been known to us all since childhood. Mary's Little Lamb undoubtedly represents the imprinting of a newborn lamb to Mary, in a manner analogous to the behavior of Lorenz's geese. It is common knowledge among farming people, who live close to nature, that when during the first few hours or days of life an animal of the flock is exposed in a more than casual way to human contact, the animal may not subsequently be well integrated into the flock from which it came.

Imprinting is generally characterized by a *critical period,* during which the capacity for imprinting appears, rises to a maximum, and fades. In ducks the energy of imprinting is at its maximum at around 11 to 14 hours; at this age the duckling will follow almost any moving object, the more energetically if the moving object makes a sound. Later, when imprinting has occurred, the same duckling placed in an anxiety-provoking situation in which it is given a choice of seeking refuge in the imprinting object or in the natural parent, will choose the former.

Imprinting may be closely related to other aspects of socialization of animals that are familiar to many of us. A puppy kept in a kennel too long will never become a house dog in the same sense in which we enjoy most house pets, but is likely to have behavioral traits and training difficulties of characteristic kind when domestication is attempted. On the other hand, it seems probable that if a socializing experience with human contact in the home comes early enough, even such a normally feral animal as the wolf may be domesticated. It is stated, for example, that a wolf cub taken into human companionship before the eyes are open can be raised in human society much as some dogs are raised. The domesticated wolf more closely resembles a German police dog or Doberman under these circumstances than the usual friendly cocker spaniel or collie, but is profoundly different from the wolf left in the woods.

One of the most remarkable examples of imprinting is called to our attention by the story of Elsa the lioness, whose career is told in the fascinating volume, *Born Free*. She needed systematically and painfully to learn the leonine role.

Students of imprinting have high-lighted the importance of *stimulation* in particular ways at critical times in bringing about social orientations. The importance of feedback as a participant in a program of mutual stimulation between mother and infant has not yet been fully assessed. When the newly born kid is removed for a period of time from the mother goat, for example, she may experience an irreparable dislocation in her own relationship to the kid, rejecting him thereafter for nursing, with refusal to make those postural and other adjustments which ordinarily permit the mother goat to nourish her infant. This phenomenon of maternal rejection of the separated kid may be observed in spite of the fact that *immediately* after delivery, a mother goat will normally accept for nursing any kid, even

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one not her own; she rapidly becomes attached to this kid in a manner which indicates the reciprocal nature of the process which will normally attach her own newborn kid to her. We are reminded that the dilemma of Mary's Little Lamb is not alone that the lamb prefers human company, but that the flock rejects the lamb that has been separated from it during a critical period.

We may ask whether in the process of primary socialization in man there are phenomena which seem to correspond to imprinting. If the process of imprinting in man has any stages, we might identify the first stage as associated with the tendency of the baby within the first hours after birth to give preferential attention to the face of the person who holds him and to maintain his regard upon the face for a period of time, even when the face is moved a few degrees away from the infant's line of vision. By eight weeks the human infant smiles and almost certainly if the infant's mother is a healthy and warm and loving person, she will smile back at the baby. It seems probable that a general identification of the human form as nurturant or a refuge occurs by this time. By four months the infant will begin to make postural adjustments to being picked up. By the time he is five or six months old he is normally able to recognize his mother as having a special relationship to him, whereas prior to this time he will accept rather indiscriminatingly the attentions and care of anyone who approaches. He will by six months have clearly defined the prime mother figure, and will distinguish her from any other person who may hold him, perhaps turning away from others to her, or making some postural or other adjustment to her when being held which uniquely identifies her.

If this slow development in the human infant of a preference for his mother is a phenomenon of socialization like imprinting, and if it has a critical period, we may guess that the critical period is somewhere between six weeks and six months.

Imprinting takes place with no obvious external reward or reinforcement, but may be modified by sensory and emotional content of the imprinting experience. Motion is important to imprinting; if the object in motion makes a sound in addition to moving, imprinting will often be stronger in some birds. Optimal levels of sensory stimulation are not necessarily known. In some animals the amount of effort invested in following an imprinting object bears a direct relationship to the strength of imprinting. The intensity of the emotional reaction generated in the "infant" during imprinting may also determine the intensity of the phenomenon. The duckling, for example, who is required to walk over shocking grids during the following response will not be inhibited in following, but will follow more frantically and will have the strength of imprinting increased.

What determines the end of the period of primary socialization, after which the critical period has passed and new imprinting is not possible? In some animals the period of primary socialization seems to end when the animal develops a fear reaction to other species. This may be a generalization of the tendency of the imprinted animal, when placed in a situation which has anxiety-provoking attributes, to run for refuge to the imprinting object or person or animal. It may be that in man certain observations are analogous. For example, the human infant shows increased anxiety at the approach of strangers in the period following identification of his mother or some other primary nurturant person beginning at about six months of age. The peak of this anxiety has been referred to as the "eight months' anxiety". At this time the infant will often cry when his mother leaves the room; sleep disturbances are common. The fear response which terminates the period of primary socialization and turns the animal to the imprinting object or person stands in sharp contrast to the fear reaction of an earlier period, which facilitated imprinting by triggering flight towards the imprinting object, even when this might be neither an appropriate natural parent nor any real refuge at all.

How permanent is imprinting? Can it be erased? These questions need much systematic study. We are reminded, however, of the jackdaw which fell in love with Konrad Lorenz. This male bird, imprinted to Lorenz in such a manner that it regarded him as a lady jackdaw, sought to win his favor by the routine courting behavior of the jackdaw, which is to feed his ladylove mouthfuls of mealworm. After some attempts to put mealworms liberally lubricated with jackdaw saliva into Lorenz's mouth, over the latter's mounting protest, the jackdaw got the message that something was wrong, but rather than come to the decision that Lorenz was not a suitable

mate, the bird arrived at the compromise of trying to put mealworms not into Lorenz's mouth, but into his ears. Lorenz's efforts at self-protection did little to erase the imprint. Moreover, it is a remarkable tribute to the jackdaw's concept of body image that he was able so accurately to identify the nutritional orifice of a species so different in form as the biologist represented.

Though imprinting is remarkably firm once it occurs, a beginning is being made in determining how the process may be interfered with. Harry Harlow has given attention to the problem in primates, and in a series of experiments rapidly becoming famous has controlled the level of stimulation of the infant Rhesus monkey during the early days and months of life. He has raised small monkeys in cages where the only contact objects besides the walls of the cage were models of monkey mothers constructed of chicken wire, sometimes covered with terrycloth and sometimes not. To these models are fixed wooden heads with friendly or unfriendly expressions, bottles which contain the milk the infant will be fed, and sometimes light bulbs for heat. Harlow has named the models "good" and "bad" mother surrogates. One of the first and surprising results of his study is that the comfort and security inherent in contact with the terrycloth-covered mother surrogate was a more important determinant of orientation of the infant for relief of anxiety than the source of relief of hunger. The infant monkey receiving his nutrition from a bottle attached to the uncovered and relatively uncomfortable chicken wire mother consistently sought the terrycloth-covered "friendly" mother as a refuge.

Harlow has shown that animals raised only with such mother surrogates as those described do not enjoy normal socialization. When in later life they are introduced into a monkey colony they prove to be socially and sexually maladjusted, are incapable of displaying affection for other monkeys, and have no self-assertiveness in the colony. The males so raised are unable to woo or to impregnate normal females; the females are likely to resist the sexual advances of even experienced normal male monkeys. When female monkeys raised with mother surrogates were impregnated, which occurred rarely and with difficulty, they made poor mothers in turn to their own infants. They failed to respond to their infants in nurturant ways, rejected and abused them severely. The human analogy is too familiar to have escaped your attention: deprived children become depriving parents. Surprisingly, though, the infant of the rejecting mother does much better than the infant raised with the cloth surrogate. Even the negative feedback of a rejecting mother has growth-promoting qualities which make life with her more socially creative than a life in which socially orienting feedback does not occur or is severely restricted.

Harlow has further minimized the stimulation of infant monkeys to circumstances where not even a mother surrogate can function as an object for a socializing experience. The infant monkey raised in a gray box again displays irreversible social and sexual disability in adult life, with no capacity to find a place in the monkey colony to which he may be introduced later. We may suspect that comparable levels of understimulation in man, or the low level of feedback which the infant may receive from a physically or emotionally sick mother or from an institutional environment, may have the same malignant potential for irreversible defects in socialization in man. Harlow has shown that some of the disabilities of the under-stimulating environment may be aborted if the infant monkey has an opportunity for a "sibling" type of relationship with other monkeys of his own age, even when no experience with or knowledge of adult monkeys is given in childhood. Even as little as an hour a day of romping together among infant monkeys of the same age may permit them to attain approximately normal aggressive and sex behavior when they are introduced later into a monkey colony.

The learning of differential sexual roles presents an interesting problem for study in monkeys and in man. The study of human intersexes indicates that the critical period for learning of the sex role in man probably runs out by two to three years of age, and it seems quite clear that the sexual role to be played by the human infant in later life is primarily determined by social forces impinging upon him during the first few years of life, rather than by genetic, chromosomal, hormonal, or other factors. After two to three years it becomes very difficult to alter the orientation of the little girl with adrenocortical pseudohermaphroditism who has been raised as a boy. The amount of androgenic hormone may determine

the intensity of sexual drives, but the male or female orientation in sexual identification is almost entirely the result of social forces and not of hormonal.

When we extend our concern to further relevant aspects of growth and development, we are lead to an area where much information has been derived from uniquely human experiences within the past decade. The names associated with this area are those of Anna Freud, Rene Spitz, John Bowlby, James Robertson, Dorothy Burlingham, and Sally Provence. One of the earliest of these studies grew out of observations made during the last war of infants and young children evacuated from London, the discovery being made by Anna Freud and her associates that it was probably less dangerous to the health of some infants to leave them in London than to separate them from their parents for a prolonged period.

Attention has since been given in numerous studies to the effects of such separation on the infant, usually not under rigidly controlled experimental conditions. Emphasis has been given to physical separation since this can be accurately defined, no major inroads yet having been made into such problems as may be presented by the separation implicit in the less than close or loving care of the mother physically present who is incapable of truly nurturant behavior towards her infant or young child.

The suggestion has been made that two processes are observable in the human infant which may represent counterparts of some of the experiences being studied in other primates. These are *privation* and *deprivation*. Privation is defined as a primary lack of effective social stimulation in early infancy, deprivation as the interruption of established contact with a mothering figure. We know somewhat more in man about the latter than about the former.

The studies of Bowlby and Spitz and others indicate that when there is an enforced separation of a mother from her infant of six to nine months of age, under circumstances where the infant has become normally socialized to her in the preceding months, a severe or moderately severe depression may occur, which Spitz has termed an anaclitic depression. The infant loses his spontaneity and good humor, becomes relatively inactive and may seriously fail to thrive. If the mother can be restored in less than three months' time, then the depressed infant appears to recover rapidly. After a variable longer period of separation of infant and mother the destructive effect upon the integrative and socializing functions of the infant may become nearly completely irreversible. The length of time of tolerable separation increases as the infant becomes older, and may reach a year's duration at 5 to 8 years of age. For those infants and young children who do *not* show an ill effect of separation Bowlby has suggested that it may be that the infant or child has already suffered effects of privation, with an impairment in the capacity for development of deep feeling, which leaves him less vulnerable to separation than the more socialized infant in whom *deprivation* leads to depression.

When separation of infant and mother has occurred in early infancy, and when the mother cannot be restored, the developmental pattern in the infant may lead to a highly characteristic picture which has been called that of the *affectionless* child. Bowlby characterizes this child as having superficial relationships, no real capacity for deep feeling or caring or for development of sympathetic or empathetic concerns where these would normally be expressed or called for. These children he finds are often inaccessible to help, profoundly frustrating to those who try to reach and to aid them. They are commonly delinquent, and often deceitful and evasive in very pointless ways, sure of discovery, with no evidence of guilt feeling, on being found out. Stealing is a particularly characteristic feature of the affectionless child and often leads to a point of contact with law. These children show a lack of concentration at school and function below their intellectual abilities.

There is some evidence that when deprivation occurs, the more completely and prolonged it is, the more likely the deprived infant or child is to develop the patterns of function described above. When the deprivation is intermittent or inconsistent, the repeatedly frustrated growing child and emerging adolescent may be filled with feelings of ambivalence, an intense need for love and raging hatred both fighting for expression.

It has been difficult to study privation or deprivation under any kind of controlled circumstances in man, but some observations of children hospitalized for various periods have lead Bowlby and Robertson to the delineation of some char-

acteristic patterns. These observers feel first that there is no age too young to be susceptible to *some* effect of privation or of deprivation. As early as two months of age it can be noted that the babbling of the infant is less under institutional circumstances than in the home. At 3 to 6 months the immediate effects of deprivation in the hospital are not very clear, though there may be some blunting of emotional responses. But after five months, when the mother has normally been clearly identified, and up to three years, there appears to be no intellectual activity through which hospitalization can be made tolerable to the infant, if it separates him from his mother. The child under the age of three years has no sense of time nor of tomorrow. Visiting arrangements will help, but only in a limited way. It is plainly necessary to hospitalize children in these early years as little as possible.

When prolonged separation cannot be circumvented, the reaction of the infant proceeds in three stages: (1) the first stage is one of protest; the infant attempts to undo the separation through the normal avenues of entreaty, crying and becoming demanding and angry; (2) next there is a lapse into a state of *despair,* with relative lethargy, a disorganization of behavior, and often with motor automatisms; (3) finally, the infant enters a period of *detachment* in which there may occur a late reorganization of behavior, with ways found to please or at least to placate those in authority. It is Bowlby's feeling that the child who has entered the period of detachment and late reorganization of behavior has paid a heavy price for his new equilibrium, and that he may have lost the capacity to attain relationships which enjoy the same warmth and confidence and capacity for affectionate sharing of experiences as previously existed.

If we can interfere with the process of normal socialization through privation or destroy it through deprivation, are there ways in which we might promote it? And if we could promote active socialization in some sense, what ought to be our goals in setting up circumstances for this? What, indeed, constitute normal social behavior or social organization in man?

In seeking answers to these questions it seems plain that the *primate* roots of man constitute the biologic basis upon which human society must rest. This being so, we may gain some useful insight from a study of primate social organization. Years ago a biologist, C. R. Carpenter, introduced several hundred Rhesus monkeys in a state of total social disorganization into an island in the Caribbean area. He saw to it that these monkeys were adequately fed, so that they had no real task except to create a social order out of chaos in the area to which they were restricted. It took about one year for these monkeys to organize. At the end of this time they had clearly established certain territories, each vigorously defended by a group of monkeys under male leaders who had established themselves by their aggressiveness at the heads of pecking orders of fairly loose construction, with lieutenants, soldiers, and hangers-on all identified. The female members of the colony had a pecking order too, which corresponded closely to that which their mates had established.

It was the consuming concern of each group of monkeys to ensure that its territory was not trespassed on by any other group, loud cries and menacing behavior meeting any intrusion. An invading army could generally go only a limited distance into foreign territory before the defensive home forces became invincible, pushing back the invaders to the border lands which defined the normally limits of the territories of the invading and defending forces.

This social organization and this behavior bear remarkable resemblances to present and past states of human society, and are like those of other primate societies in their natural settings. The *defense of territory* which these observations call attention to has been observed in wide varieties of vertebrates from fishes to mammals. The defense of territory has in many species been established as a much more urgent impulse to social and even individual action than sex. Indeed, many activities once thought to be related to sexual function are now seen with deeper insight to represent territorial defense. The song of many male birds is not a courting song or a serenade, but a warning to other male birds to stay away from the territory which they have staked out and to which their brides will soon come. When the lady appears, the song ceases. The apparent intensity of the drive to territorial organization and defense in man and in other animals has suggested to some that mankind may be doomed forever to some kind of struggle for territory as an inescapable realization of his biologic heritage. Indeed,

as we know, such struggles may now constitute the major threat to survival of the human species.

In this frightening pass it is very necessary for us to look around for some avenue of escape or of hope. If there is any hope, it can only arise out of an optimistic view of man's potentialities. Pessimism and fear can only intensify present difficulties and widen the chasms that separate individuals and groups of men. There is one very appealing solution, it seems to me, which is adequately rooted in biology, and which takes advantage of that fortunate prime human trait of *symbolism*. Man has repeatedly sought symbolic solutions to his problems; we now face a problem of paramount importance demanding solutions both conceived and implemented with biologic insights. How may symbolism lead to an adequate answer?

First of all, it seems appropriate that we define the planet Earth as the territory and domain of man, and that all mankind join together to defend it against the elements and against man himself, using a growing understanding and appreciation of natural and biologic and human forces to create a wholesome world system in which man and nature find peace and harmony. Secondly, we may reject the question as to whether we are mice or men, which has too often been a battle cry and choose for examination a new question suggested by our appreciation of the need for definition of territory. We need to decide not whether we are mice or men but whether we are birds or beasts. Can we, like certain birds, orient to territorial needs in ways which elevate the importance of the *individual* and of the *family*, elevating the family to the position of the prime biologic unit of man in a society of free men, or must we continue to draw territorial lines only along racial or linguistic or cultural patterns, clannish nationalism, regionalism, and isolation raising man-made barriers which separate potentially hostile groups and create destructive tensions and anxieties?

I suggest that we have a try at making birds of men. This may be less difficult than we might imagine! It goes smoothly in another direction, at any rate. It is easy in this day and age, as in every age, to make beasts of men. A Negro friend in Georgia told me how, as we were one day discussing imprinting and its possible relevance to unresolved interracial problems in our community. When I suggested it was easy to make beasts of men, he said "I know what you mean! You just get hold of them before they have their eyes open." We ought to be able to reverse the process with accurate insight and early action. We have established in law the integrity of the individual and of the family as guaranteed rights of man in a democracy, along with the right to privacy. This would seem to be a long step already taken towards fashioning a human society which defends territory more like birds than monkeys.

Cautions are in order. We still know too little about imprinting, socialization, privation or deprivation in man or animal to be able to find in the animal observations made to date completely confident analogies to human behavior or social organization. The most important gains from animal studies lie in the indication of directions for further investigation. But, cautions or not, these behavioral phenomena in primates and in lower animals are real, and cry for understanding. However we may interpret them, and whether or not we ultimately find them relevant to the human condition, we cannot now afford to ignore them, rooted as they and we both are in innate and acquired biologic forces.

The following questions are among many needing early answers: What are the optimal arrangements for newborn infants? Will the necessary reciprocal stimulation of mother and infant for optimal growth have a better start in a rooming-in setup than in the usual newborn nursery and maternity ward? If the newborn infant has not yet himself entered a critical period for socialization to his mother as a nurturant figure, how about the mother for socialization to her infant? What constitutes adequate stimulation of the human infant without being too much? What constitute normal or growth-promoting levels of interruption of contact between mother and infant? What dangers are there in too early dilution of the maternal role by work outside the home and other arrangements which separate mother and child for considerable periods? If socialization is aided as to strength or speed by some anxiety, is this favorable or not favorable to ultimate function of the adult in a free society? What early needs have human infants for contact with others their own age in and out of the home? Is the contact with a peer group more important for the only child than for a child with siblings nearer

the same age?

More questions: Can we develop within the framework of our democratic institutions adequate preventive or remedial programs for averting the potential disasters which may follow privation or deprivation? How can we become more alert to the problems presented by mothers or fathers of deprived background who in subtle ways limit the capacity of their own children to achieve healthy socialization? Are there better solutions for blatantly pathologic patterns of mothering than to remove children from sick homes at the risk of creating new problems of deprivation worse than the problem of living with a sick or depriving mother? May not even a legally "unfit" mother have something essential for the healthy growth of the child whom she has reared in infancy? If she does, how can we reach or help her? What contribution can or should fathers make in developing or safeguarding socialization in the infant?

Without knowing the answers to these questions we must draw upon incomplete insight and strong suspicion in many circumstances to make arrangements for children which we think will improve their lot. In new hospital construction arrangements are increasingly being made for facilitation of parents' visiting and staying with the hospitalized child. Rooming-in is no longer limited to the lying-in period. Such arrangements can no longer be regarded as merely sentimental and therefore not likely biologically necessary. And if further study should show that these arrangements have no transcendent importance for most children, they may prove crucial for some and must in any case be regarded as comfortable, logical and humane. This is the least we can ask until some day when in the light of full knowledge we may be truly clever or wise.

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TEACHING SEMINAR

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Chemotherapy of Viral Infections

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In approaching the problem of chemotherapy of virus infections one must consider certain ideas that apply to chemotherapy in general. The plan of attack is the same whether we are treating a bacterial infection, a virus infection or even a neoplasm. In all cases we try to find an agent that will selectively destroy the invading cell or virus particle with minimal damage to the normal cells of the body. Bacteria are sufficiently complex and differ so greatly from normal body cells that it is not too difficult to find an agent that will selectively destroy the bacteria without significant damage to the host cells. For example, many antibiotics preferentially inhibit bacterial cell wall synthesis. Bacterial cell walls contain unique substances such as muramic acid, and diaminopimelic acid.[1] This qualitative difference between the bacterial and hosts cells gives us a good point of attack on the bacteria. However, even with bacteria we may not always find significant qualitative differences between the metabolism of the bacterial cell and the host cell and thus must resort to quantitative differences. In such an instance it is necessary to use a compound that is potentially injurious to host cells as well as bacterial cells. The rationale in such cases is that the bacterial cell is much more sensitive to the chemical agent than are the host cells, and thus we can selectively inhibit the bacterial cell with concentrations of the drug that are essentially non-toxic to the body.

With viruses the problem is much more difficult. The virus, being composed essentially of nucleic acid and a protein coat, presents very few points of attack. Virus reproduction is largely dependent upon the host cell for precursors, energy, and enzyme systems. Thus it is often necessary to attack the cell's own metabolic processes in order to impede the synthesis of new virus. To date, no unique constituent has been found in animal viruses that would give us a qualitative type of approach to chemotherapy of virus infection. When a virus infects a cell, the cell does not appear to develop new synthetic schemes for the purine and pyrimidine bases that are to be used for virus synthesis.[2] This, then, would probably not be a fruitful site for selective inhibition. A more likely site for selective inhibition might be the polymerization of purine and pyrimidine nucleotides into the unique viral nucleic acid.[2] Since qualitative differences between the synthesis of viral nucleic acid and normal cellular metabolism have not yet been found, our attack on the virus at this time seems to be limited to a quantitative type of approach. Certain viral enzymes appear in the host cell during synthesis of new virus in many cases,[3] but this has not been of great significance in viral chemotherapy so far.

A brief review of the life cycle of the virus will point out various steps where viral inhibition might be achieved. The virus particle is first adsorbed to the host cell surface, after which penetration occurs. Once the virus is inside the cell, an unwrapping of the protein coat from the nucleic acid core of the virus appears to take place. No infectious material can be identified in the cell during this phase, which is called the eclipse period. After the eclipse period, synthesis of viral

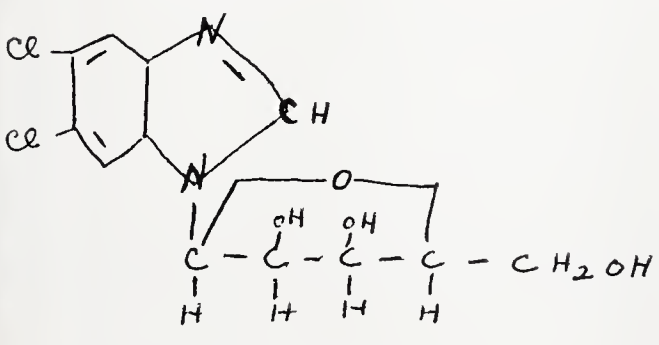
*University of Arkansas Medical Center, Little Rock, Arkansas.

nucleic acid and protein occurs. After synthesis, the nucleic acid and protein must be assembled into complete virus particles. Finally the new virus is released from the cell. Each of these steps of the virus life cycle presents a possible point of attack on the virus by various agents.

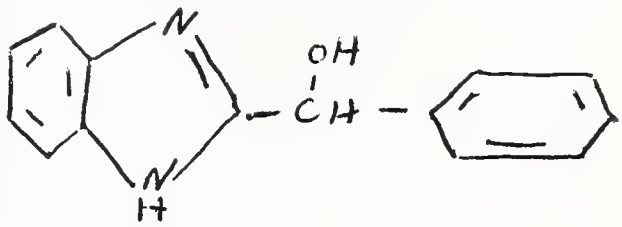
Literally thousands of chemical agents have been tested for possible usefulness in chemotherapy of virus infections. Numerous agents have been found that show definite inhibitory effects on the virus. Unfortunately, most of the agents found to be effective against viruses have no clinical application, because of their high toxicity to host cells. Most agents that have been found to protect laboratory animals against virus disease, had to be supplied at the same time that the animal was infected with the virus in order to achieve protection. Such agents would be of no use in treating clinically evident virus diseases. It was not until 1962 that an agent was found that could significantly alter the course of a clinically evident virus disease in man.[2,4] This agent is 5-iodo-2′-deoxyuridine (IDU). IDU will be discussed in detail later on. Interferon, a natural antiviral agent produced by virus infected cells, will not be discussed as this paper is limited to chemotherapeutic agents.

The table represents a partial list of the many agents which have been shown to have some viral inhibitory effect. The less promising agents will be briefly mentioned, and those agents which have shown more promise for the future will be discussed in greater detail. These agents have been roughly divided into several groups on the basis of their mechanisms of action. However, for the most part the mechanisms of action of these agents are poorly understood.

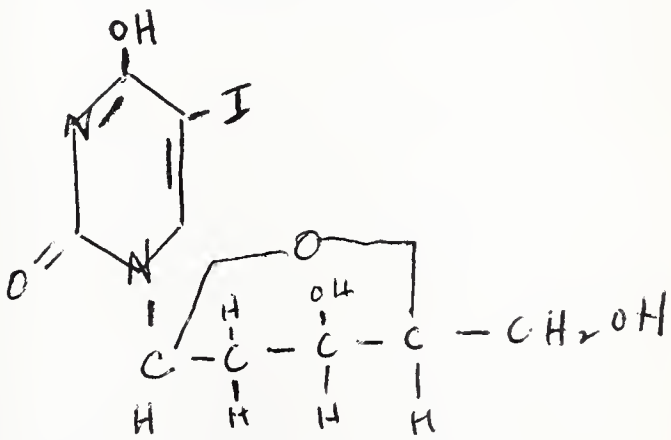
I. Antimetabolites
 A. Inhibitors of nucleic acid synthesis
 1. Amethopterin
 2. 5-Fluorouracil
 3. 5-Bromouracil
 4. 8-Azaguanine



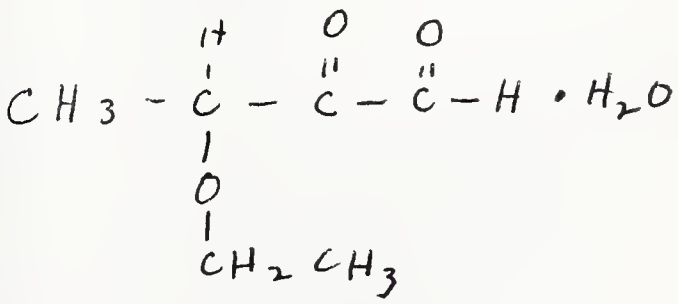
 5. 2-Thiouracil
 6. Cytosine arabinoside
 7. Benzimidazole derivatives
 a) 5, 6-Dichloro-1-β-D-ribofuranosyl benzimidazole (DRB)
 b) 2 (α-Hydroxybenzyl)-benzimidazole



 8. 5-iodo-2′ deoxyuridine (IDU)



 B. Inhibitors of protein synthesis
 1. DL-Methoxine
 2. DL-Ethionine
 3. p-Flurorphenylalanine
 4. L-Canavanine
 5. Threo-phenylserine
II. Inhibitors of energy production
 A. Sodium monofluoroacetate
 B. 2, 4-Dinitrophenol
 C. Sodium azide
III. Inactivation of the virus particle
 A. β-ethoxy-α ketobutyraldehyde hydrate (Kethoxal)



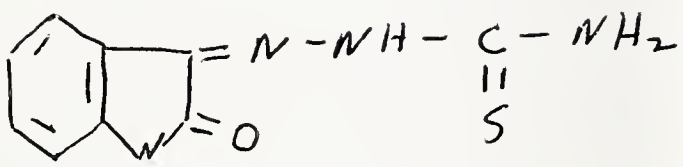
 B. Polylysine
 C. Lipocarbohydrate of Phase II *Sh. Sonnei*
 D. Mucopolysaccharide from intestinal tissue of mouse

E. Formaldehyde
F. Deuteroporphyrin + light
G. Chlorophyllin + light
H. Napthoquinones
I. Metal Chelates
J. Iodine
K. Ether

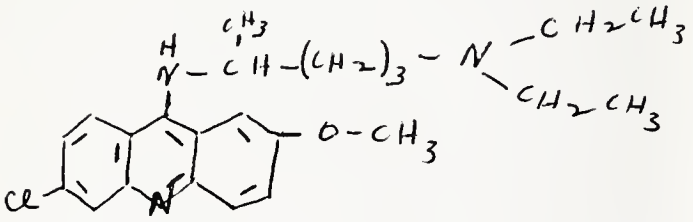
IV. Alteration of tissue response
A. Xerosin

V. Agents which interfere with the adsorption or penetration of virus particles.
A. Receptor destroying enzyme (RDE) of Vibrio cholera
B. α-amino-p-methoxy phenylmethanesulfonic acid

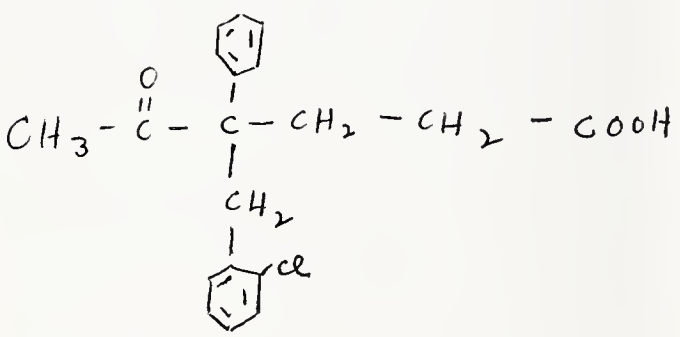
VI. Unknown mechanisms of action
A. Isatin-thiosemicarbazone



B. Quinacrine (Atebrin)



C. Caprochlorone



D. M 5-840
E. Helenine
F. Myxoviromycin
G. Violarine
H. Heliomycin
I. Virusin
J. Chlorpromazine HCl
K. Phenolic compounds
L. Capsular polysaccharide from *K. pneumoniae*
M. Stilbamidine
N. Pentamidine
O. Acetylsalicylic acid

Inhibitors of Nucleic Acid Synthesis

Amethopterin, a folic acid antagonist, has been shown to prolong the life of mice which are infected with lymphocytic choriomeningitis virus.[5,6] Presumably the site of action of a folic acid antagonist is in the synthesis of the purine bases.

5-Fluorouracil, 5-Bromouracil, 8-Azaguanine, and 2-Thiouracil have all shown viral inhibitory action to varying degrees.[5] All of these compounds, as well as amethopterin, have a marked effect on normal cellular metabolism. They have not shown much promise as viral chemotherapeutic agents.

Cytosine arabinoside is effective in vitro against herpes simplex, vaccinia, Newcastle disease virus, and pseudorabies. It is believed that cytosine arabinoside interferes with the conversion of cytosine ribose to cytosine deoxyribose.[17]

Much work has been done with benzimidazole derivatives[8]. 2 (α-Hydroxybenzyl)-benzimidazole (HBB) has a high virus inhibitory effect and is less toxic to normal cells than certain other benzimidazole derivatives. HBB inhibits the multiplication of most of the members of the enterovirus group, but shows no inhibition of other viruses, such as arbor, myxo, reo, adeno, herpes, and pox viruses.[9,10,11] Tatum and co-workers have shown that HBB inhibits an intracellular step in viral multiplication but has no effect on the infectivity of the virus.[10] HBB does not appear to be very toxic to tissue cultures cells at virus inhibitory concentrations. There is apparently little or no effect on the multiplication of tissue culture cells in the presence of HBB, at least during the first 72 hours. However, favorable long term effects of HBB on tissue cultures have not been reported. In many instances HBB only delays the cytopathologic effect of virus infected cultures and does not ultimately prevent it. Benzimidazole derivatives have prolonged the life of mice infected with influenza virus, but have not spared them from ultimate death.

One of the most promising drugs for use in viral chemotherapy is 5-iodo-2′ deoxyuridine (IDU). Prusoff first synthesized this compound in 1958. It was first used as an inhibitor of DNA synthesis in tumors. In 1961 Herrmann found that IDU inhibited plaque formation by herpes simplex and vaccinia virus in tissue culture speci-

mens.[12] Since that time, IDU has been used in more than 5,000 patients suffering from herpes simplex or vaccinia keratitis with good results.[12] IDU has been shown to significantly alter the course of herpes simplex or vaccinia keratitis even after severe clinical disease was established. This is an extremely important quality that puts IDU far ahead of the numerous other virus inhibitory agents. Iodocytidines are more stable and more soluble than IDU but require metabolic conversion to IDU before they are effective. The drug is applied locally to the eye at 1-2 hour intervals on a 24 hour a day schedule. Frequent applications are necessary due to the rapid degradation of the compound. IDU has been given intravenously to patients with leukemia. These patients showed no response to the drug, presumably due to ineffective plasma levels of the drug.[12] At concentrations of 10-1000 micrograms of IDU per mililiter in infected cultures of rabbit or human amnion, virus synthesis is completely inhibited while cellular DNA synthesis is only partially blocked.[12]

It has been suggested that IDU acts by inhibiting thymidine kinase, thymidylic acid (TMP) kinase, and/or DNA-polymerase, depending upon the cell type which is used for the study.[13] Presumably the IDU is incorporated to some extent in DNA in the place of thymidylic acid (TMP). The overall effect of IDU is to decrease DNA synthesis, hence decrease the synthesis of virus. Also since IDU is incorporated into DNA, it has been suggested that this "fraudulent" DNA may fail to replicate.[2] 5-Bromo-2′ deoxyuridine (BDU) is similar to IDU in its action.[14]

Inhibitors of Protein Synthesis

Such agents as DL-Methoxine, DL-Ethionine, etc. have failed to show any promise for viral chemotherapy.[15] However, 5-methyltryptophan when used in combination with 5-Bromo-2′ deoxyuridine does appear to be effective in tissue culture.[16]

Inhibitors of Energy Production

Agents such as sodium monofluoracetate (inhibitor of the citric acid cycle), 2, 4-dinitrophenol (an uncoupler of oxidative phosphorylation), and sodium azide (interferes with oxidative processes) all appear to inhibit viral multiplication to some extent. However, these agents inhibit virus multiplication by acting directly on the cell's vital metabolic processes. This type of therapy would be analogous to starving a patient in order to rid him of a tapeworm.

Inactivation of the Virus Particle

Substances which contain an aldehyde group adjacent to a carbonyl group, such as Kethoxal (see table) are virocidal. Such compounds react directly with the guanine group of ribonucleic acid by forming a stable ring between the glyoxal group of the keto-aldehyde and the diamine structure of guanine. Formaldehyde is frequently used for virus inactivation. Certain metal chelates appear to be adsorbed onto the surface of the virus resulting in inactivation of the virus particle. These chelating compounds are believed to combine specifically with lipid components of the virus coat.[17] The other compounds listed in the table under "inactivation of the virus particle" have all been shown to have an anti-viral effect believed to be due to a direct combination with the virus. For the most part these agents are of no use in the intact animal.

Alteration of Tissue Response

It has been proposed that rather than attacking the virus itself, progress could be made in searching for a method of inhibiting the effects of the virus on the cell. Since very little is known about how a virus causes cellular damage, this area has not been critically investigated.

Xerosin, a biological product from cultures of *Achromobacter xerosis,* has the ability to suppress pneumonia in mice infected with influenza virus.[15] Xerosin is not virostatic or virocidal. It's effect is believed to be due to the inhibition of secondary tissue reactions such as edema, and hemorrhage.

Agents Which Interfere With the Absorption or Penetration of Virus Particles

Receptor destroying enzyme (RDE) of *Vibrio cholerae* reduces the susceptibility of chick embryos to influenza virus.[15] RDE is thought to remove surface attachment sites from the host cell, thus interfering with virus attachment. α-Amino-p-methoxy-phenylmethanesulfonic acid interferes in some manner with the penetration of the virus.[15]

Unknown Mechanisms of Action

Isatin-thiosemicarbazone is an effective inhibitor of the pox virus.[18,19,20] Turner and co-workers

have reported a case of a child in which n-methylisatin-thiosemicarbazone was used.[20] The child had a severe vaccinia infection which was unresponsive to antibiotics and vaccinia hyperimmune gammaglobin. N-Methylisatin-thiosemicarbazone was administered in divided doses of 250 mg every six hours. Two days after the onset of therapy the lesions began to regress and the general condition of the child rapidly improved. The infant developed diarrhea and was withdrawn from the drug. It was not certain that the diarrhea was secondary to the drug, as an infectious diarrhea was prevalent among the other infants in the hospital ward at that time.

Bauer and co-workers studied the effect of N-methylisatin-thiosemicarbazone in people who were contacts of smallpox patients.[21] Most of the contacts had been vaccinated against smallpox. One thousand and one contacts were treated with the drug in a dosage ranging from 3-6 grams per day, given orally. One thousand twenty-six contacts were not treated and served as controls in this study. Three cases of smallpox appeared in the group which had received N-methylisatin-thiosemicarbazone while seventy-eight cases of smallpox and twelve deaths appeared in the control group. This study suggests that N-methylisatin-thiosemicarbazone is more effective than vaccination for the prophylaxis of smallpox infection.

The mechanism of action of the isatin thiosemicarbazones is poorly understood. These compounds do not affect virus absorption but appear to interfere with viral multiplication at some point after the biosynthesis of DNA.[19]

Quinacrine is effective against Equine encephalitis, Rift valley fever, and Louping ill.[15] It is effective in mice and adult rats when given before or shortly after viral infection. Due to the species specifity of quinacrine and in view of the fact that the drug is not virus-inhibitory in tissue culture, it is assumed that the effectiveness depends upon some metabolite of quinacrine.

Caprochlorone has been found to reduce the infectivity of PR8 influenza virus in mice.[15]

Numerous antibiotics such as M5-840 from the culture filtrate of *Pencillium stoloniferum,* helenine, myxoviromycin, violarine, heliomycin, and virusin have varying degrees of anti-viral activity, but none have proven effective in the overall treatment of viral disease. Tetracycline is of course useful in treating the psittacosis and lymphogranuloma group of viruses. However, these two viruses are not considered to be "true" viruses but are somewhere in between the true viruses and the rickettsia.[22]

Central nervous system depressant drugs, such as chlorpromazine HCl have some effect on viral diseases. These agents may act by modifying the tissue lesions. In general, such drugs have been of no value as viral chematherapeutic agents.

Phenolic compounds, stilbamidine, or pentamidine have also been used to inhibit viruses, but without any indication of usefulness for clinical application. There is evidence that acetylsalicyic acid has inhibiting effects upon certain viruses.[23]

The first demonstration of successful chemotherapy of a virus disease in experimental animals was made with the capsular polysaccharide of Friedlander's bacillus in 1951.[24] When this capsular polysaccharide was administered to mice suffering from pneumonia virus of mice (PVM) it protected these mice against ultimate death.

In a recent article by Furusawa et al., the use of Nofomycin, (an antibiotic) or 5-methyltryptophan in combination with 5-bromo-2′deoxyuridine protected HeLa cells against vaccinia virus.[16] The importance of this experiment is that the virus infection was completely inhibited and the tissue cultures were followed for a total of 45 days with no cytopathologic effects noted. These workers feel that their success was due to the fact that they were inhibiting both nucleic acid synthesis and protein synthesis at the same time.

Summary

Many claims have been made concerning the effectiveness of viral chemotherapeutic agents. For the most part, however, it has been necessary to administer these compounds to an animal at the same time, or shortly after infection with the virus, in order to offer any protection to the animal. Since virus infection is usually quite well established before clinical symptoms appear, such agents would be of little use in the therapy of virus disease. In many cases, death of experimental animals can only be delayed and not avoided by the use of chemical agents. The compounds considered in this paper which at this time appear to have the greatest potential for the future are the isatin-thiosemicarbazones and 5-iodo-2′deoxyuridine (IDU). When more knowledge has been accumulated concerning the nu-

cleic acids and virus-cell inter-relationships, we will perhaps have a better chance of finding more effective viral chemotherapeutic agents.

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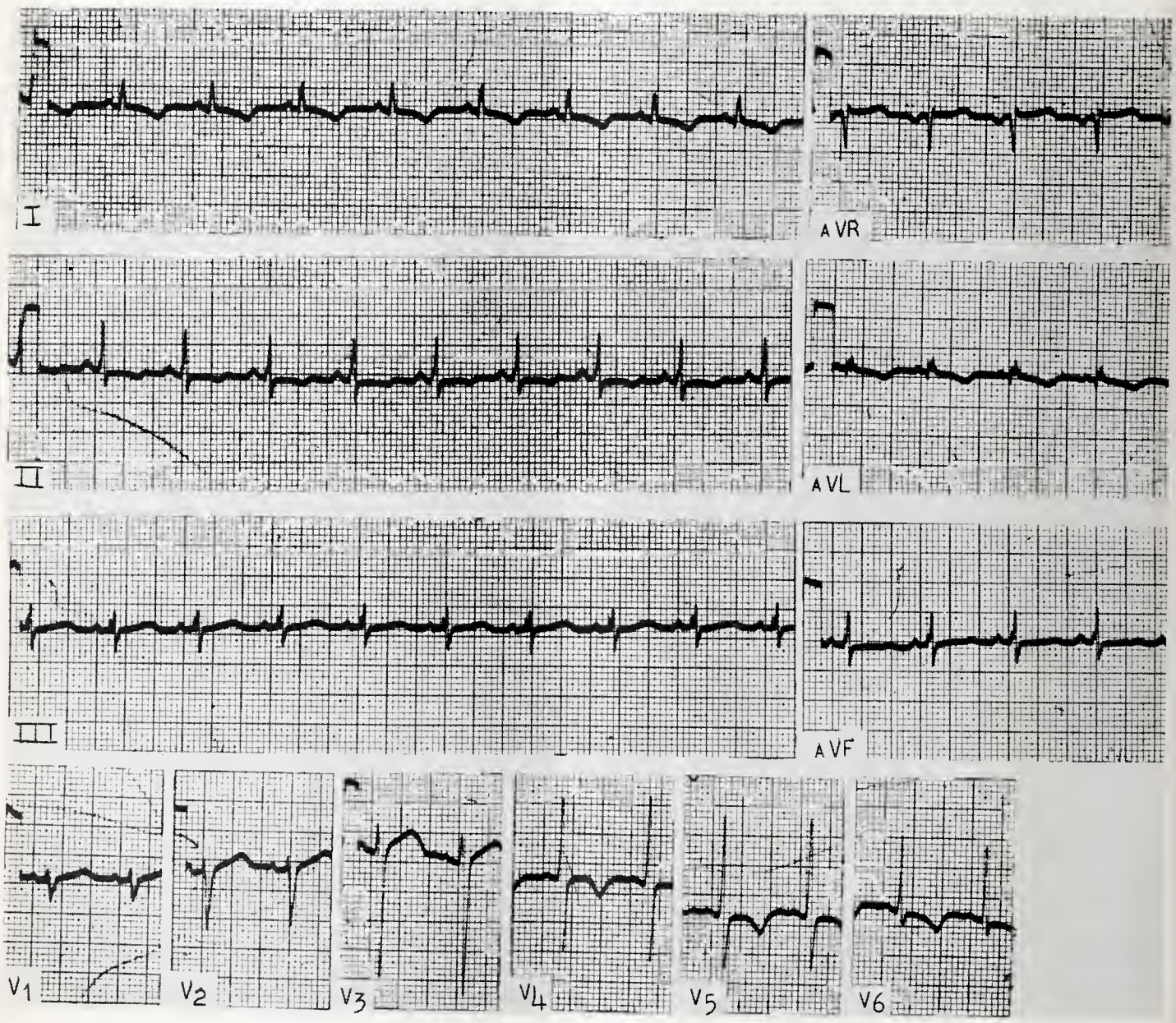


ELECTROCARDIOGRAM OF THE MONTH

WHAT IS YOUR INTERPRETATION?

AGE: 11 SEX: F BUILD: SLENDER BLOOD PRESSURE: 110/80
CARDIAC DIAGNOSIS: None
OTHER DIAGNOSIS: Diphtheria Polyneuritis
MEDICATION:
HISTORY:

ANSWER ON PAGE 303



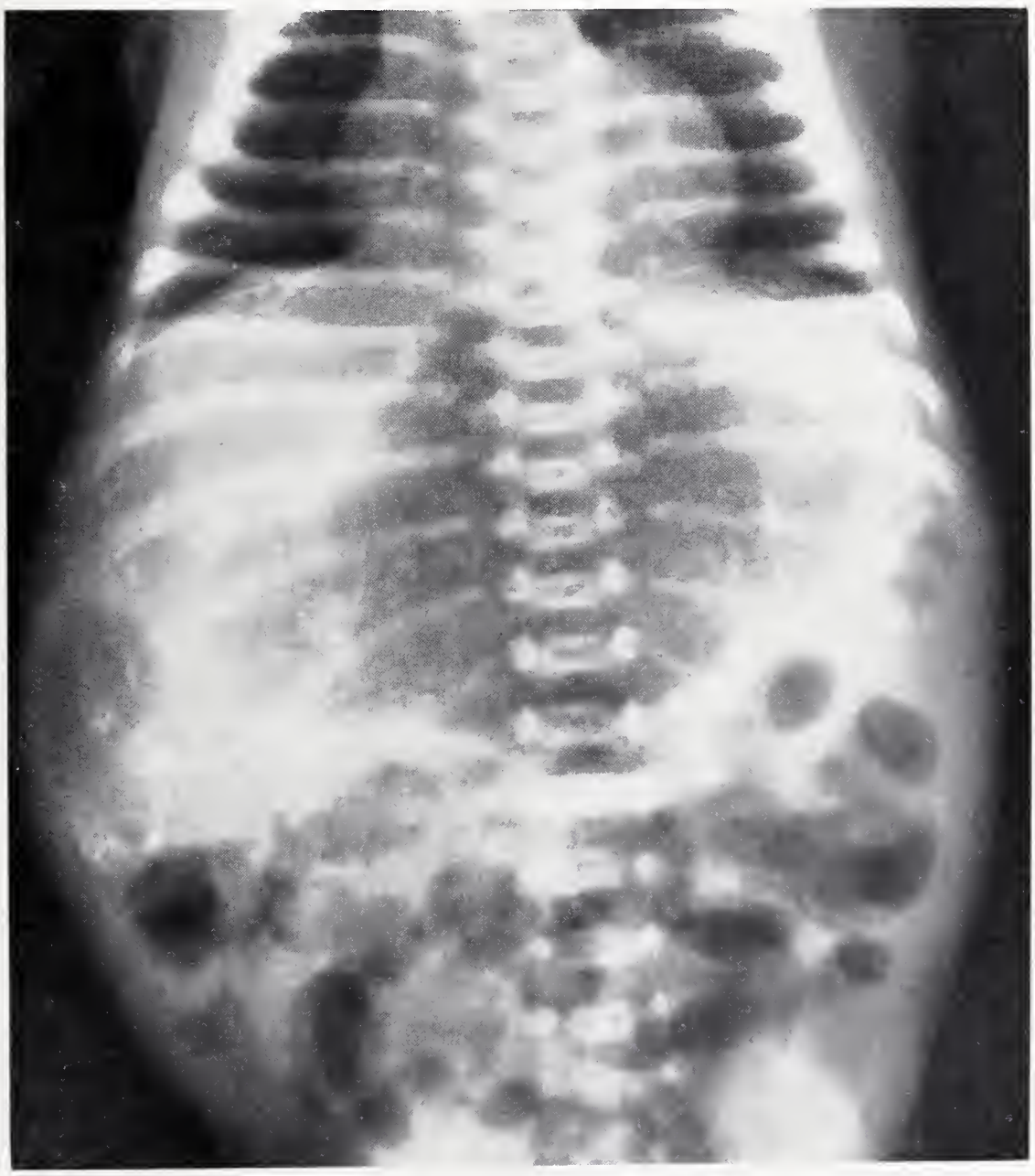
The Department of Medicine, University of Arkansas Medical Center
James S. Taylor, M.D., Professor of Medicine



WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

ANSWER ON PAGE 303



No. 21-69-39

2 day old female

HISTORY: This infant weighed 3 pounds, 6 ounces at birth. She passed one small meconium stool on the day of birth and had no further bowel movements. On the second day of life the baby developed abdominal distention and began to vomit bile stained material.



PUBLIC HEALTH AT A GLANCE

Nursing Homes in Arkansas

The State Board of Health was officially made responsible for the licensure of Arkansas Nursing Homes by the passage of Act 85 of 1947. This Act established the Division of Hospitals and Act 111 of 1953 strengthened it in regard to regulating and licensing nursing homes.

In 1947 there were 9 nursing homes licensed with a total of 342 beds. During the years of 1952 and 1953 separate Regulations were promulgated for nursing homes and after the passage of Act 111 of 1953 considerable activity was noted in the construction of new nursing homes. By 1962 there were 103 licensed nursing homes with a total bed capacity of 4,286 beds. As of December 1, 1964 there were 155 licensed nursing homes with a total bed capacity of 7,956 beds. Also, as of December 1, 1964, nursing home construction is in progress to provide an additional 736 nursing home beds.

In 1961 the State Legislature passed Act 414 which provided for an Advisory Council for Nursing Homes. Prior to this time one Advisory Council had served the State Board of Health in an advisory capacity on the Hill-Burton Program, the Hospital Licensure Program and the Nursing Home Licensure Program.

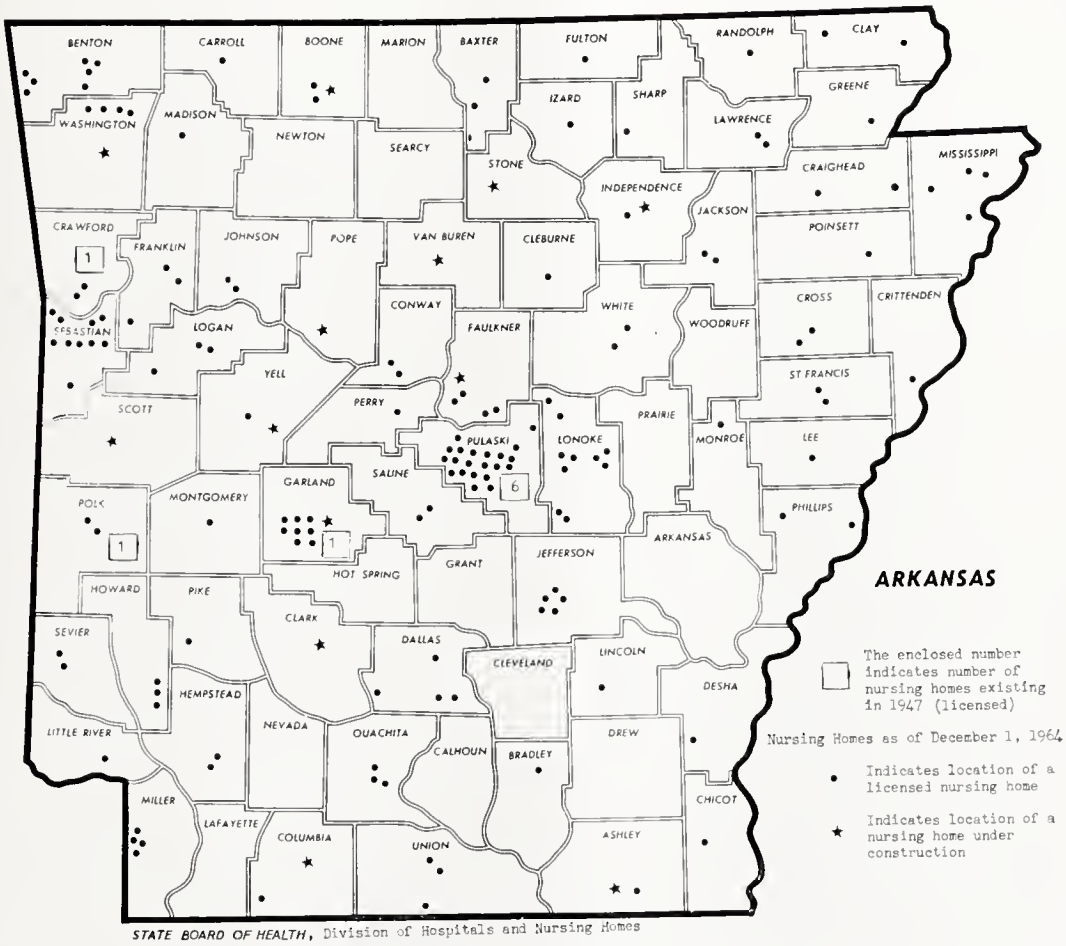
There are three sets of regulations for the construction of nursing homes but only one set of regulations for their operation. Both the Hill-Burton Program and the Federal Housing Administration Program have separate regulations for the construction of nursing homes. These regulations are more stringent than the State Regulations for the construction of such facilities. The Small Business Administration accepts the State Regulations for their construction loan program. Upon completion, all nursing homes operate under the State Licensing and Regulating Program.

There are three major categories for obtaining funds for building nursing homes. The Hill-Burton Program provides an outright grant for institutions constructed and operated by units of government and nonprofit organizations. The Federal Housing Administration and Small Business Administration both have loan arrangements for the construction of nursing homes. Some private agencies also make loans for nursing home construction. All three of the above financing arrangements are under the direct construction program of the Arkansas State Board of Health.

The State Board of Health has promulgated

rules and regulations for construction and operation of nursing homes. The Department inspects the nursing homes every three months by both a Sanitarian and a Registered Nurse. One Nutritionist is employed full time to work with nursing home personnel.

The Arkansas Map with this article shows the location by counties of the licensed nursing homes in 1947, the existing nursing homes and the location of nursing homes under construction as of December 1, 1964.



STATE BOARD OF HEALTH, Division of Hospitals and Nursing Homes



EDITORIAL

Renal Disease and Failure

Alfred Kahn, Jr., M.D.

The University of Arkansas School of Medicine has instituted a fine broad research program on renal disease. This department was spawned by the Peter Bent Brigham Hospital's program of basic and clinical research in nephrology. The benefits of this program to Arkansas and the surrounding area is obvious.

There is an excellent symposium on renal disease in The American Journal of Medicine (Volume 36, page 643, May, 1964). Renal tubular transfer of electrolytes is discussed by Giebisch and Windhager. Gottschalk reviewed osmosis with reference to dilution and concentration. Other articles discuss ammonia production, excretion of organic acids, etc.

Perhaps the most important article to the practitioner is that of J. P. Merrill on the Management of Chronic Renal Failure (page 763). At the outset, Merrill discussed pyelonephritis as a major cause of renal failure; frequently, it is asymptomatic and discovered and diagnosed by finding more than 100,000 pathogenic bacteria per cc. Obstruction to drainage of the urinary system frequently leads to pyelonephritis. Other causes of so-called reversible renal failure are listed as renal vascular disease, potassium depletion, disorders of calcium metabolism, S.B.E., Lupus, membranous glomerular nephritis, gout, myeloma, nephrotoxins, and intravascular toxins. This list of reversible types of renal failure is of greatest importance, as the physician may attack the underlying disorder with some hope of success even in a fairly desperate situation.

Merrill comments that the correlation between the patient's symptoms and the chemical disorders seen in renal failure may be striking. Often the patient feels fairly well even in the presence of a severe biochemical defect. It is notable that the chemical abnormalities are usually measured in terms of extracellular fluid, and this may reflect only a part of the intracellular biochemical upset; this is true, for example, in the case of urea, and the author feels that a balanced diet, including protein, fat and carbohydrate, is biochemically sounder than drastically restricting protein; urea output in the stable case of renal failure is the same as in the normal person even though the blood level of the former is greater—and besides the urea may not be a significant cause of symptoms.

In renal failure, Merrill stresses the kidney behaves as though it were made up of a limited number of nephrons and thus these were overworked and lost their ability to adapt to varying chemical situations.

Merrill cautions against prescribing large quantities of water for although it may lead to the passage of a larger volume of urine, the extra volume will not carry out additional solutes. The restriction of sodium is inadvisable; a balanced intake of sodium providing both chloride and bicarbonate is recommended with the amount limited only by his cardio-vascular competence; this is best handled by letting the patient have increasing amounts of "balanced sodium" while observing the effects of increments on his vital signs and lungs while watching for peripheral edema. Some patients get into an iatrogenic low sodium renal failure. The author says potassium seldom needs to be restricted on the basis of blood potassium as it may not accurately reflect the total body potassium metabolism.

Reserpine is recommended as the most useful agent in lowering the high blood pressure of renal failure; drastic lowering of the blood pressure is deemed inadvisable as it decreases renal filtration; other drugs occasionally useful are dibenzyline and methyl-dopa (Aldomet[R]). For acute crises diazoxide (Mutabase[R]) is said to be very effective. Merrill states that the heart failure associated with renal disease is somewhat different than in the presence of normal renal function; a corollary is that therapy with digitalis is not always as effective as anticipated and the digitalis is cleared from the body by the kidneys at a slower rate than usual; diuretics, both mercurial and thiazide, are rather ineffective but they are not harmful.

Merrill found Compazine[R] beneficial in the treatment of the nausea of renal failure. He also recommended frequent small feedings. The anemia of renal failure is due to suppression of marrow and slightly to hemolysis and responds poorly to therapy of any sort. Occasionally transfusions are of value, as is iron in women with iron loss superimposed. No effective treatment is known for the central nervous system manifestations of renal failure. Defective calcium absorption is said by the author to be the main cause of the disorder calcium metabolism in renal failure. Aluminum hydroxide gels which bind phosphorus may be helpful here, and if secondary hyperparathyroidism occurs, parathyroidectomy can be considered in selected cases.

There are currently two mechanical means of treating chronic renal failure, and they are both effective: artificial kidney and peritoneal dialysis. The so-called artificial kidney is by far the more effective and totally anemic patients, even with both kidneys removed, can be kept alive indefinitely. In one technique, a plastic tube is put into a vein and an artery of the forearm and left in place; these plastic tube can be hooked onto an artificial kidney for a few hours twice per week and the patient may lead a normal life in between dialysis. Intermittent peritoneal lavage with a plastic catheter is only 20%-40% as effective as the artificial kidney.

Ultimately, the treatment of chronic renal failure will be the transplantation of kidneys, and this technique is still in its infancy.

ANSWER—What's Your Diagnosis?

DIAGNOSIS: Meconium peritonitis

X-RAY FINDINGS: Irregular calcification is seen scattered throughout the peritoneal cavity and in the wall of the intestine. The large gas shadow is the upper abdomen which appears to be stomach bubble proved at surgery and autopsy to be a gas filled abscess secondary to a perforation of the transverse colon. No cause for the intrauterine colon perforation was found.

ANSWER—Electrocardiogram of the Month

INTERPRETATION:

Rate: 100 RHYTHM: Sinus arrhythmia

PR: .12 QRS: .07 QT: .34

ABNORMAL. Generalized T inversions are present.

COMMENT: Diphtheria may cause myocarditis with non-specific abnormalities, as here, or conduction defects may be found.

MEDICINE IN THE NEWS

THE MONTH IN WASHINGTON

The Food and Drug Administration has started enforcing the prescription drug advertising provisions of the new law.

Sales of ethical drugs are now exceeding $2 billion a year in the United States. The Bureau of the Census reported ethical drug sales at $2.05 billion in 1963, the first year that they had gone over the $2 billion mark. The Pharmaceutical Manufacturers Association's figure was $2.39 billion.

The law requires that prescription drug advertisements show:

—The "established name" of the drug, if one exists, in type at least half as large as that used for the brand name;

—The drug's quantitative formula, and

—A true and non-misleading brief summary of information about adverse side effects, contraindications, and effectiveness of the drug for the guidance of physicians.

In enforcing these requirements, FDA said it would seek to determine whether a fair balance exists between the information on effectiveness and that on side effects and contraindications.

The FDA's Bureau of Medicine has started monitoring professional journal advertising for prescription drugs. It will forward violative advertisements with appropriate recommendations to the FDA Bureau of Regulatory Compliance.

Dr. Joseph F. Sadusk, Jr., Medical Director of FDA, said that it is the duty of physicians to keep fully informed of the composition, mode of action, efficacy and potential toxicity of drugs because as the potency of drugs increases, "so generally does their complexity and their potentiality for harm."

Violations of prescription drug advertising will be evaluated in two categories:

—Positive claims or omissions concerning the product which present potential danger to the patient in varying degrees. Examples include omission of some of the pertinent side effects, precautions or contraindications; improper statements about the effectiveness of, or indications for, the drug or antibiotic; omission of some of the information on various dosage forms, ingredients, or directions for use where required.

—Claims which may or may not involve danger to patient health but which, in the selling message, can seriously mislead as to the proper place of the drug or antibiotic in the total spectrum of products available to meet a specific disease situation.

The American Medical Association and the Food and Drug Administration have warned that two fever and pain-relieving drugs are causing fatal agranulocytosis, a blood disorder, in some patients.

The drugs are aminopyrine and dipyrone, closely related compounds which have been dispensed widely by prescription for many years. Drastic label changes restricting the recommended uses for the drugs were announced by FDA. An editorial supporting the FDA action was carried in the AMA's journal, JAMA.

The FDA ruling was based on case reports collected by AMA and on recommendations of a special committee of medical experts in the fields of hematology, internal medicine, neurology, pediatrics and pharmacology.

* * *

Nearly one million more people were admitted to hospitals in the U. S. in 1963 than in the previous year, according to the Health Insurance Institute.

The Institute said that American Hospital Association statistics showed a record 25,267,000 Americans, or one of every seven, were hospitalized last year. This represented an increase of 960,000 over 1962. This meant that each day more than 69,000 persons entered non-federal short-term general and other special hospitals, and that on an average day in 1963 there were 530,000 pa-

tients—2.8 persons per 1,000 population—under hospital confinement.

There were 698,000 beds available for patients in 1963, an average of 3.7 beds per 1,000 population.

The AHA, which includes terminal hospitalizations in its survey, found the average hospital stay for all ages to be 7.7 days. A study conducted by the U. S. National Health Survey, which included federal hospitals, and was based on representative household interviews, put the average hospital stay at 9.4 days. It did not include terminal hospital stays.

The NHS report showed that persons with health insurance protection averaged shorter hospital stays than those with no insurance protection at all. This may indicate, the report suggested, that persons with health insurance protection will seek hospital care more often for diagnosis or for less serious illness than the uninsured.

The number of persons protected by hospital expense insurance provided by insurance companies, Blue Cross, Blue Shield and other health care plans, rose to 145,329,000 by the end of 1963, the Institute said.

Benefits paid by these organizations toward the costs of hospital care totaled $4,544,000,000, or an average of $12.5 million a day. Total health insurance benefits amounted to $7.8 billion.

* * *

A Presidential Study Commission has recommended a $2.9 billion program on heart disease, cancer and stroke.

The research and treatment plan would be built around a network of regional centers designed to learn more about these diseases which cause 70 per cent of American deaths.

The study group was set up by President Johnson in March and commissioned to draw up a blueprint for improving national facilities for fighting these diseases. At present the government is spending about $220 million in the research and treatment areas covered by the report.

The group urged establishment of a network of regional heart disease, cancer and stroke centers "for clinical investigation, teaching and patient care."

These would be located in universities, hospitals, research institutes and other institutions.

Included would be 25 centers for heart disease, 20 for cancer and 15 for stroke to be established over a five-year period.

The program also would include a second national network of "diagnostic and treatment stations" located in communities throughout the nation. The purpose of this would be "to bring the highest medical skills in heart disease, cancer and stroke within reach of every citizen." This plan envisions over a five-year period 150 stations for heart disease, 200 for cancer and 100 for stroke.

The group also urged "a broad and flexible program of grant support" to stimulate more advanced research efforts in university medical schools, hospitals and other health care centers.

It suggested that the Public Health Service receive $25 million for such grants the first year which would be raised to $75 million the fifth year of operation.

The American Medical Association withheld comment on the report for the time being.

"If, however, legislation is introduced in the Congress calling for implementation of the program, the A.M.A. will react at that time," a spokesman said.

Section of Ophthalmology of the Southern Medical Association

The Section of Ophthalmology of the Southern Medical Association meeting in Memphis, Tennessee, under the chairmanship of Dr. Albert C. Esposito of Huntington, West Virginia, had as its guest speaker, Dr. Harold F. Falls, of Ann Arbor, Michigan.

Federal Grants for Undergraduate and Research Training 1948-1963

Federal grants to medical schools for the support of undergraduate and research training programs were first made in 1948.

Federal grants for the support of undergraduate training, known in the past as categorical teaching grants, are designated for undergraduate instruction in cardiovascular disease, oncology, and psychiatry. While the average grant per school from this source is not great, the program seems to have become established upon a permanent basis and these grants have become an important and stable part of the support of the medical schools.

Although federal grants for research training include assistance with certain related costs of teaching, for the most part these grants are

awarded as stipends for predoctoral and postdoctoral fellows who are involved in training for research.

Nongovernmental agencies, particularly foundations, voluntary health agencies, and industry, were active in the support of undergraduate and research training even before 1948. It is probable that the demonstration of the needs in these areas stimulated support of these programs by the federal government. In the last few years, nonfederal funds for undergraduate and research training have totaled between $5 and $7 million per year.

Table 1 and Figure 1 refer only to grants of federal origin in support of undergraduate and research training.

Undergraduate training grants, which amounted to approximately $1.5 million in 1948, now appear to have levelled off at approximately $7.5 million.

The increase seen in federal grants for research training is more dramatic, rising from just over $48 thousand in 1948 to almost $70 million in 1963. The rapid growth in federal grants for both undergraduate and research training is apparent and it is interesting to note the relative shift since 1948 in the percentage of total federal funds distributed between the two.

The research training grants gain in importance each year as the demand increases for well trained, full-time medical school faculty members.

TABLE 1

FEDERAL GRANTS FOR UNDERGRADUATE AND RESEARCH TRAINING AWARDED BY THE NATIONAL INSTITUTES OF HEALTH TO U. S. MEDICAL SCHOOLS FOR SELECTED FISCAL YEARS: 1948-1963

	Amount			Percentage		
Year	Under-Graduate Training	Research Training	Total	Under-Graduate Training	Research Training	Total
1948	$1,607,274	$ 48,143	$ 1,655,417	97.1	2.9	100.0
1949	1,855,924	538,890	2,394,814	77.5	22.5	100.0
1958	6,256,681	12,894,979	19,151,660	32.7	67.3	100.0
1959	6,644,235	17,845,417	24,489,652	27.1	72.9	100.0
1960	6,718,843	30,158,197	36,877,040	18.2	81.8	100.0
1961	6,889,257	48,074,743	54,964,000	12.5	87.5	100.0
1962*	6,600,000	53,300,000	59,900,000	11.0	89.0	100.0
1963*	7,491,000	67,236,000	74,727,000	10.0	90.0	100.0

*Estimated

Source: Resources Analysis Section, Office of Program Planning, National Institutes of Health.

Submitted by the Division of Operational Studies of the AAMC.



Arizona Cancer Seminar

The Arizona Cancer Seminar for doctors is being resumed after an interval of two years, and will be held at the Pioneer Hotel in Tucson, March 17 to 20, 1965.

American College of Obstetricians and Gynecologists

The American College of Obstetricians and Gynecologists will hold its 13th Annual Clinical Meeting, Sunday-Thursday, April 4-8, 1965, at the Civic Auditorium in San Francisco.



PERSONAL AND NEWS ITEMS

Dr. Saltzman Will Head Chamber of Commerce

Dr. Ben N. Saltzman was elected president of the Mountain Home Chamber of Commerce at a special board meeting at the Cedar Grill. He succeeds H. E. Keeter, who resigned December 19th as head of the Chamber. Dr. Saltzman, who has served previously as president of the organization, will hold the office until January 1, 1966.

Dr. Gillespie Receives Grant

Dr. Edward Clark Gillespie, Little Rock obstetrician, has been awarded a $10,000 grant by the W. E. Darby Foundation for continuation of his studies into the causes of miscarriages in pregnancies.

Dr. Kolb Speaks at Little Rock

Dr. Payton Kolb of Little Rock spoke at a traineeship program for professional nurses at the Veteran's Administration Hospital in November. He spoke on the subject of patients with brain damage, their management and rehabilitation.

Dr. Maguire Honored

Dr. Frank Maguire, Sr., of Augusta was honored in November by the Woodruff County Library Commission with a resolution in recognition of his years of faithful service to the library program.

Dr. Dodge Attends Meeting

Dr. Eva Dodge of Little Rock attended the Ninth Congress of the Pan American Medical Women's Alliance in Hollywood, California in November. She is the current president of the alliance.

Gentry Medical Center Opens

The new Gentry Community Medical Center in Gentry was dedicated and opened in November. Dr. Donald Weaver has his office at the clinic. He will be joined in practice by his brother, Dr. Robert Weaver, next summer.

Crawley-Cogburn Clinic Has New Address

The Crawley-Cogburn Clinic of Forrest City has moved to a new location. The new building is located at the corner of Lindauer Road and Kittle Road, across the street from Forrest Memorial Hospital. The clinic is operated by Dr. C. E. Crawley and Dr. H. N. Cogburn.

Dr. Johnston Attends Meetings

At a meeting in November at Memphis, Dr. Thomas G. Johnston of Little Rock received a Certificate of Appreciation from the Southern Medical Association for his service as a councilor from Arkansas. From Memphis, Dr. Johnston went to Mexico City to speak before a national meeting of Mexican allergists.

Dr. Etherington Opens Office

Dr. Robert A. Etherington has opened offices for the practice of medicine in Eureka Springs. He formerly practiced in Mount Vernon, Washington.

Dr. Clements to Head Study

Dr. Samuel Clements, assistant professor in the departments of psychology and pediatrics and director of the Child Guidance Study Unit at the Medical Center, is heading a three-phase national study of the child with learning and behavior problems. The study is sponsored by the National Institutes of Health, National Institute of Neurologic Diseases and Blindness and the National Society for Crippled Children and Adults.

Doctor's Clinic Opens at Walnut Ridge

The formal opening of the new Doctor's Clinic in Walnut Ridge was held in November. Dr. James Hickman has offices in the building.

$25,000 for Medical Center

The Charles E. Merrill Trust of New York City has made a grant of $25,000 to the University of Arkansas School of Medicine for general operating expenses. The Charles E. Merrill Trust was

established by the will of the late Charles E. Merrill, a founder of the brokerage firm of Merrill, Lynch, Pierce, Fenner & Smith, Inc.

Dr. Knight Guest Speaker

Dr. W. E. Knight, Fort Smith orthopedic surgeon, was the speaker at the November meeting of the Soroptimist Club in Fort Smith. He explained how clinics in foreign countries were conducted by United States physicians.

Two Doctors Join State Hospital Staff

The appointments of Dr. Walter S. Mizell as assistant superintendent at the Benton Unit of the State Hospital and Dr. Eaton Wesley Bennett as staff physician at the Little Rock Unit have been announced. Dr. Mizell has replaced Dr. Miles F. Kelley, assistant superintendent at Benton since 1960, who asked that he be relieved of administrative duties so that he could become psychiatrist in charge of the Southeast Treatment Center which will serve several counties in Southeast Arkansas.

RESOLUTIONS



WHEREAS, the Members of this Society are grieved by the loss of our colleague and friend, Dr. Kingsley W. Cosgrove, Sr., and

WHEREAS, he was a highly respected and valuable member of this Society for thirty-eight years, and

WHEREAS, he enjoyed the esteem not only of his colleagues, but of his patients, of his church and of his community as well, and

WHEREAS, his contribution to the health of the State of Arkansas has been recognized as outstanding;

BE IT THEREFORE RESOLVED:

THAT we, the Members of the Pulaski County Medical Society, express our heartfelt sympathy to the family of Dr. Cosgrove, and

THAT this resolution be forwarded to his family, and

THAT a copy of this resolution be made a part of the permanent records of this Society, and

THAT we forward a copy for publication in the Journal of the Arkansas Medical Society.

By Action of the Memorials Committee
T. Duel Brown, M.D., Chairman
Gordon Holt, M.D.
Forrest Henry, M.D.

Read to and approved by:
The Executive Committee
December 16, 1964

OBITUARY

Dr. Oliver William Clark

Dr. Clark died December 1, 1964, at his home in Pine Bluff. He has been retired since 1955.

He was born April 14, 1874, at Nashville. He was graduated from Tulane University Medical School and interned at St. Joseph Hospital at Memphis. He established his practice in Pine Bluff in 1904. From 1914 until 1926, he operated a private hospital and nursing home. In 1926 he moved to the Pine Bluff Clinic and practiced there until his retirement. In addition to his medical practice, Dr. Clark had also been active in real estate development, and served as chairman of a number of public works. He was a member of the American Medical Association, the Arkansas Medical Society, the Jefferson County Medical Society. He was a Mason and a Presbyterian. Dr. Clark is survived by his widow, a son and five grandchildren.



PROCEEDINGS OF SOCIETIES

UNION

Dr. A. J. Baker has been elected to serve as president of the Union County Medical Society in 1965. Serving with him will be: R. L. Turnbow, president-elect; Ronald M. Lewis, secretary-treasurer.

PULASKI

Dr. W. Payton Kolb has been installed as president of the Pulaski County Medical Society for 1965. Dr. Joseph D. Calhoun is president-elect and Dr. Guy R. Farris is vice president. Dr. William G. Reese is secretary; Dr. James Morrison, treasurer, and Dr. Thomas D. Honeycutt, treasurer-elect.

The Society observed "Diabetes Detection Week" in November by distribution of free testing kits and by sponsoring a diabetic cooking class for those who have to prepare food for the diabetic. Dr. Louis Tolbert is chairman of the Diabetes Committee of the county society.

HOSPITAL STAFF OFFICERS AROUND THE STATE:

Arkansas Baptist, Little Rock—Walter O'Neal, Chief of Staff; J. O. Porter, chief-elect; Grimsley Graham, vice chief, and Harlan Hill, secretary.

Memorial Hospital, North Little Rock—W. D. Sessoms, Chief of Staff; Joe P. Stanley, chief-elect; Amail Chudy, vice chief, and George Stroope, secretary.

St. Joseph's, Hot Springs—Vernon E. Sammons, Jr., Chief of Staff; Louis R. McFarland, vice chief; Jerry Hoyt, secretary.



BOOK REVIEWS

PREVENTIVE MEDICINE IN WORLD WAR II, prepared and published under the direction of Lieutenant General Leonard D. Heaton, The Surgeon General, United States Army; Edited by Colonel John Boyd Coates, Jr., MC, USA; illustrated, pp. 397, published by Department of the Army, Washington, D.C., 1964.

This book is concerned with preventive medicine in World War II. It is a compendium written by different authors. It is an exceptionally well-written book and will be of great interest to physicians in military medicine and to practicing physicians who were faced with the prob- of preventing medicine in World War II. AK

ANIMAL BEHAVIOUR AND DRUG ACTION, Ciba Foundation Symposium, edited by A. V. S. de Reuck, M.Sc., D.I.C., A.R.C.S., and Julie Knight, B.A., Illustrated, pp. 491, published by Little, Brown & Company, Boston, 1964.

This book is of particular interest to pharmacologists, neurologists, and psychiatrists. It is of little interest to the practicing physician. There are sections on motivational effects, behavioural effects of drugs, factors which modify the behavioural effects, relationship of animal to man experiments, etc. An outstanding group of authors have participated in this symposium. AK

CELLULAR INJURY, Ciba Foundation Symposium, edited by A. V. S. de Reuck, M.Sc., D.I.C., A.R.C.S., and Julie Knight, B.A. Illustrated, pp. 403, published by Little, Brown and Company, Boston, 1964.

This symposium is of interest to internists, pharmacologists, and pathologists. It discusses in some detail various mechanisms of cellular injury. It is recommended, as an outstanding symposium on this subject. It will have little interest to the practicing physician. AK

TUBERCULOSIS  ABSTRACTS

Sponsored by Arkansas Tuberculosis Association

REACTIVATION OF INACTIVE PULMONARY TUBERCULOSIS

In a study conducted among former tuberculosis patients whose names were on the registry of a local health department, 8 per cent were found to have reactivated. Long-term medical supervision of inactive cases, with bacteriologic studies, is recommended.

The reactivation of apparently inactive pulmonary tuberculosis has drawn increasing attention from both clinicians and those in public health.

Most studies of reactivated disease have been among Veterans Administration hospital patients or patients discharged from sanatoriums. The present study was conducted among patients whose names were on the tuberculosis registry of a local health department.

The study had several objectives. They were (a) to determine the number of reactivated cases among persons with apparently inactive pulmonary tuberculosis; (b) to obtain data, for both the reactivated and inactive groups, on sex, age, extent of disease, and type and duration of treatment; (c) to compare the extent of disease in the reactivated group with diagnosis at the time of reactivation; (d) to establish and maintain a register of inactive cases of pulmonary tuberculosis; and (e) to determine an effective method of following inactive cases to prevent reactivation.

Records were reviewed of persons with a diagnosis of active pulmonary tuberculosis known to the Long Beach Health Department from 1935 to 1960. Of these, 2,536 were selected because the disease had become inactive, and 1,508 were invited to participate in the study because of availability of addresses.

Former patients living in the Long Beach metropolitan area were asked to visit the health department for a chest X-ray and bacteriologic studies. If they preferred, they could request these examinations of their private physicians.

PROCEDURE FOLLOWED

Those residing outside the Long Beach area were asked to visit their physician or local health department. Results were to be forwarded to the Long Beach Health Department. The health department of jurisdiction and hospitals and other health agencies were informed of the project.

Of the 399 responses, 343 persons visited the Long Beach Health Department, and 28 others, under the care of a private physician, gave the health department permission to obtain the desired information from the physician. Information concerning another 28 was received from such sources as hospitals and health departments. Only 16 refused to participate in the study.

History was obtained for each person who visited the health department for the interval between prior treatment and the beginning of the study. In addition, a 14- x 17-inch chest X-ray film was taken and a specimen for bacteriologic study was requested.

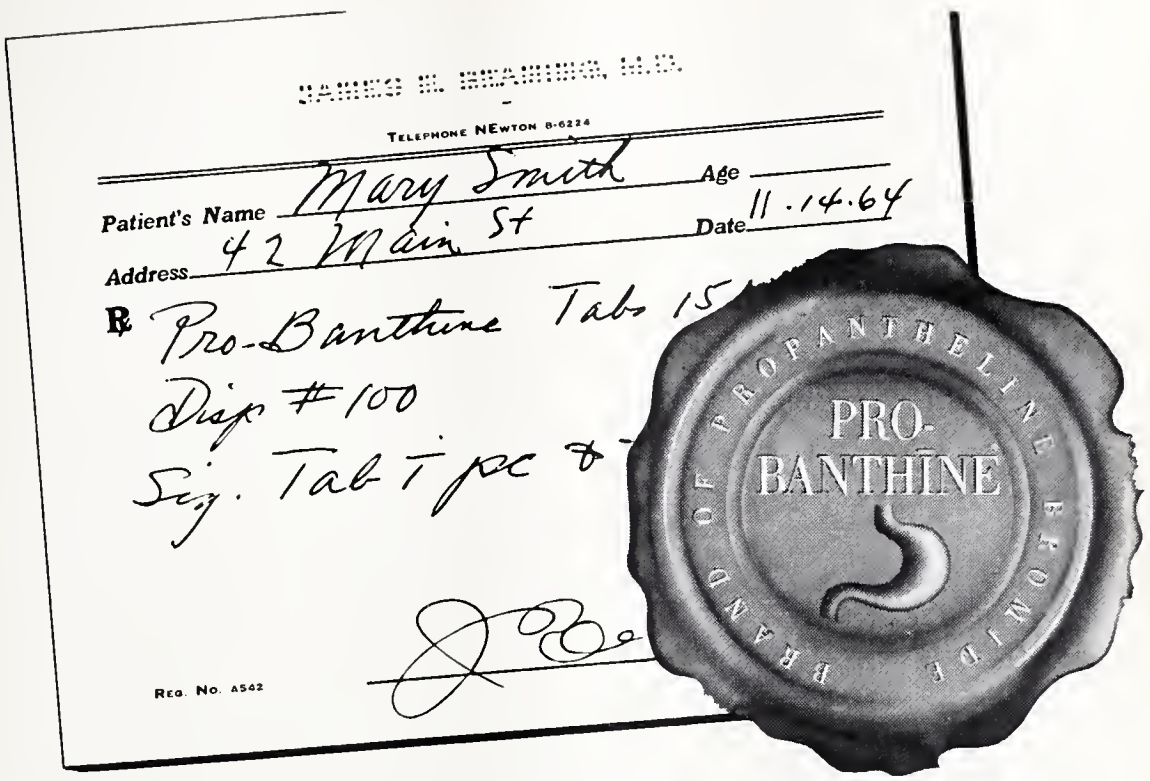
Bacteriologic studies were extended over a two-month period to allow time for adequate cultures. All studies included a niacin test to exclude unclassified mycobacteria. A health department physician reviewed the test results and completed the study history form. The latest chest X-ray was compared with earlier films available in the patient's records.

A summary of findings was sent to the patient's private physician, and the patient was notified by mail of the test results. Persons with positive chest X-rays or bacteriologic findings indicating active disease were urged to obtain medical care.

REACTIVATED DISEASE

Evaluations were completed on 383 persons, or 15 per cent of the 2,536 selected for the study.

I. D. Litwack, M.D., and John Gardner, M.D. *Public Health Reports*, September, 1964.



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Research in the Service of Medicine

Thirty-one persons, or 8.09 per cent, were found to have reactivated disease. The status of 352 persons remained inactive.

Moderately advanced tuberculosis had been the most frequent diagnosis in both the inactive and reactivated groups: 58 per cent of those with reactivated disease and 42 per cent of the inactive group. In the reactivated group about 23 per cent had minimal disease, and 19 per cent, far advanced; among those with inactive disease, 41 per cent had a diagnosis of minimal disease, and 16 per cent, far advanced.

Men outnumbered women in both groups, comprising 55 per cent of the reactivated group and 60 per cent of those with inactive tuberculosis. Most of the 383 persons in the study were in the 35 to 64-age category, forming 71 per cent of the reactivated group and 74 per cent of the inactive group. In the reactivated group, only 2 were under 35 and 7 were 65 or older. In the inactive group, 8 per cent were under 35 and 18 per cent were 65 or older.

A smaller percentage of the persons with reactivated disease had received drug treatment (35.5 per cent) and had undergone one or more surgical operation (22.6 per cent) than those in the inactive group, of whom 42.6 per cent had taken drugs and 29.5 per cent had been treated surgically.

Of those with reactivated disease, 6 had had tuberculosis drugs for two years or more, 5 for less than two years, and 20 had received no drugs. In the larger inactive group, 58 had received chemotherapy for more than two years, 92 for less than two years, and 202 had had none.

When previous X-ray films of the 31 patients with reactivated disease were compared with those taken during the study, 22, or 71 per cent, showed no evidence of change; 9 revealed a new infiltrate. Chest X-rays of those in the inactive group showed no change in disease status.

Diagnosis of 10 patients with reactivated tuberculosis changed from that recorded at the time of inactivation. Improvement in the disease status was noted in 5.

Case of reactivated pulmonary tuberculosis undoubtedly exist among those who did not respond to letters inviting participation in the study and among those for whom no current address could be obtained. The records of 635 deceased persons will be followed to determine if active pulmonary tuberculosis was a cause of death.

Based on results of the study, the following recommendations are made concerning cases of inactive pulmonary tuberculosis:

1. Annual medical supervision is needed for years, possibly for life.
2. Bacteriologic studies should be included, as well as comparison of chest X-ray films with earlier films.
3. All patients who have not received adequate chemotherapy should be on a prophylactic medical regimen for two years.
4. An orientation program for both physician and patient should be undertaken.

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JOURNAL OF THE Arkansas MEDICAL SOCIETY

Vol. 61 No. 10

FORT SMITH, ARKANSAS

89TH ANNUAL SESSION
ARKANSAS MEDICAL SOCIETY
LITTLE ROCK, ARKANSAS, APRIL 25-28, 1965

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*Lennox, W. G.: Epilepsy and Related Disorders, Boston, Little, Brown and Company, 1960, vol. 2, p. 865.

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NEWS—Our readers are requested to send in items of news, also marked copies of newspapers containing matter of interest to the membership.

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THE JOURNAL OF THE Arkansas MEDICAL SOCIETY

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THE ERADICATION OF SYPHILIS

Edgar J. Easley, M.D.

Assistant State Health Officer

Arkansas State Baard af Health

The spectre of disease—man's enemy—has been a challenge throughout the ages. This paper is based on the most exciting challenge that has faced public health in this century, and that is the eradication of syphilis from the United States.

At the annual American Medical Association in June, the House of Delegates adopted the following resolution:

"Resolve that the House of Delegates of the American Medical Association take official cognizance of the resurgence of syphilis and gonorrhea to the proportions of a *national health problem;* that it *initiate* . . . a comprehensive inquiry of the causative factors of this sharp increase in disease for which a simple cure is now available; that it take leadership in educational and research measures designed to control and *eliminate* syphilis; and that it provide guidance to *private physicians* in the epidemiology of the venereal diseases, and of their social implications."

State Health Departments throughout the country received this resolution with gratitude. The thought of eradicating syphilis has been gaining momentum with each decade. Never again will the rising tide of syphilis be turned from the citadel of private medicine and the public clinic.

November 1, 1964, the Council of the Arkansas State Medical Society adopted a similar resolution.

Public health today can urge the eradication of syphilis, can offer every assistance to private medicine; but in the final analysis, it is the private doctor who must make the decision to eradicate.

This declaration of intention, this declaration of support from the major voice of organized medicine in our country is found to be singularly significant, encouraging, and full of promise.

Publicly employed physicians believe in American medicine—that the American people are entitled to realize the highest state of health which the mind of man can conceive.

American medicine—private medicine if you will—can and should assume the lead in the fulfillment of that realization.

Such leadership has been manifest recently in connection with another disease. In city after city, from the 49th parallel to the southern tip of Texas, from Staten Island to the Golden Gate, local medical groups in rapid order have taken hold of the Salk and Sabin vaccines, and in all practicality have eradicated polio.

And now, as the astrologists say, the signs seem right for syphilis. They are found in the respected pages of the leading medical journals; and in the pronouncements of such august bodies as the New York Academy of Medicine.

Only recently, the Public Health Committee of the New York Academy branded as "unacceptable" the failure of any of its members to report morbidity, or to grant permission to have their patients interviewed for contacts. It called morbidity reporting, and employment of public health epidemiologic assistance "the physician's duty and responsibility;" and it denied that such action infringes on the rights of patients, or constitutes a breach of professional privilege.

Arkansas State statutes and Arkansas State Board of Health regulations require that morbidity reports on certain diseases be reported promptly by physicians to the State Health Officer, Arkansas State Department of Health, Little Rock, Arkansas. This requirement includes

syphilis, gonorrhea, granuloma inguinale, chancroid, and granuloma venereum, the five communicable venereal diseases. Furthermore, the statutes and regulations require that these diseases be reported by name, address, age, sex, and color. The courts and legal minds have determined that this required reporting on the part of the physician is not a violation of physician-patient trust or ethics, and that such reporting is necessary in the protection of the public health, and further, that a patient is not privileged to bring suit against a physician in this instance.

Thus, it seems that American medicine stands ready for the attack which will drive the scourge of syphilis from the American scene. But the road to eradication is long and hard, and the time is short, very short; and a lot of help is needed.

Where is that help to come from? From the offices of the private physician. According to all indications, physicians in private practice are seeing more than half of all the syphilis coming to medical attention. Surveys indicate they are reporting only a fraction of the cases they see and only a small fraction of the reported cases are being interviewed adequately for contacts. This group of patients and their contacts are vital to the eradication effort.

The Public Health Committee of the New York Academy went on to say, ". . . both the public and the professional must be informed, aroused, and alerted to the rekindlement of venereal disease in its midst."

The Committee noted that: "Knowledge and fervor were once combined to start effective action that brought control of venereal disease: . . . and it is time for a renewed attack . . ."

It stated further that if every person, every organization, would perform its function and cooperate, it is reasonable to expect that syphilis and gonorrhea, would once again approach eradication.

The time has come for us to face facts, and face them squarely, let the chips fall where they may. And here is the first fact we might as well face together:

Statistics of syphilis have been toyed with for a long time now, and minimum statistics have continued to be cited, figures which were very much below the probable level of incidence. Yet anyone who has studied the available statistics would have to conclude beyond the shadow of a doubt that people in this country are being infected with syphilis at a rate exceeding 10,000 cases a month or 120,000 a year. And that is not an outside figure; it is still a conservative estimate. Let us look at our own state for a moment in light of this national picture. Last month for instance, there were 35 cases of infectious syphilis reported to the State Health Department. Eleven of these cases occurred in one county.

Here's a second fact: For every person treated for syphilis in this country, at least ten need treatment. This means in Arkansas alone, 350 persons are in need of treatment in light of last month's cases alone. Carry these figures out for a year and the consequences become frightening. On a national scale a million untreated cases of syphilis in this country at this very moment is nothing to be swept under the rug and forgotten.

And here's something else to think about: Twenty-five per cent of untreated syphilitics develop late syphilitic manifestations; four out of five deaths from syphilis are due to cardiovascular complications, one of the most difficult manifestations of late syphilis to diagnose; moreover, it is highly unlikely that many vigorous post-mortem attempts would be made to establish syphilis as a contributing cause of death.

Consequently, if we are to face reality, we must face the probability that 2,800 or so annual deaths in this country recorded as due to syphilis represent only a fraction of the true number; and that syphilis very probably contributes to more than 1,000 deaths a month, or more than 12,000 a year.

The time has come to call a spade a spade. Twenty, thirty, one hundred cases of any other intolerable, frightening, crippling, or killing disease in a community is an epidemic. Why not syphilis? Why should syphilis—a crippler and a killer—be hidden from view, when secrecy is its best ally, intelligence the best offense against it?

In February, 1962, the late President John F. Kennedy called for a ten-year program aimed at the eradication of syphilis in this country. That goal was reconfirmed by President Johnson shortly after he assumed office.

As close as 1972 seems, it's still two years after the target date for putting two men on the moon and returning them safely to the earth.

And the funny thing is that many of the same people who are skeptical about the eradication of syphilis do not entertain the slightest doubt about

the success of the moon project, possibly even ahead of schedule. This certainly does not make sense, and an exertion of effort to amend these attitudes must be made.

Syphilis can be eradicated! It can be eradicated by 1972. Physicians in private practice must avail themselves of the services of highly trained staffs of State Health Departments, who are at the constant, if not instant disposal of private medicine. Syphilis epidemiology is a time-tested commodity which has proven effective time and again in syphilis control.

In the management of persons exposed to infectious syphilis, the physicians may choose between two courses; watchful waiting or epidemiological treatment. We are fighting time, fighting the spread of the disease with the ultimate weapon—treatment; and the best time to treat syphilis is while it's incubating, while its spread is still zero.

A Message from Our President

As President of your Arkansas Medical Society for this year, I extend to you my personal invitation to the annual meeting in Little Rock, Arkansas, April 25-28, 1965. Yes, I even urgently request your attendance at this meeting. I do this because of an excellent scientific program that has been arranged by our Program Chairman, Dr. Tom Ed Townsend of Pine Bluff. You will find this program to be interestingly arranged and informative.

There is another reason for making every effort to attend this meeting in Little Rock in April. The physicians in Arkansas are going to be requested soon, possibly before the meeting in April, to sign a statement promising compliance with a certain section of the Civil Rights Law which prohibits discrimination in order to get paid for any patient treated under any type Welfare Program or the Kerr-Mills Law. This seems rather superficial on the surface; however, in my opinion, we should have some investigation as to the full import of the statement we sign and some open discussion in our Medical Meeting concerning the program. In addition to this item of business, the problem of how to implement any type of legislation passed by Congress is going to need consideration. If the Medicare Program is passed, there is going to be some discussion of nonparticipation in the project.

I certainly hope that each County Society discusses this problem in their next meeting, and that we have some recommendations at our meeting at Little Rock in April. If you are a delegate, draw up some type resolution expressing your County Society's requests or recommendations. This should be turned in at the first session of the House of Delegates on Sunday, April 25. It will then be referred to one of the reference committees where it can then be discussed by any member of the Arkansas Medical Society, whether he is a delegate or not, at the open hearing of that reference committee. This gives an opportunity for each member of the Arkansas Medical Society to have a part in its business transactions. I certainly hope that a great many of the physicians of the state take part in these reference committee hearings this year.

Let's make this meeting of the Arkansas Medical Society the greatest in its history. I will see you in Little Rock on April 25, 1965.

C. Randolph Ellis, M.D.

DRUGS AND ANESTHESIA

F. E. Greifenstein, M.D.*

The ever expanding number of new and potent drugs, their rapid acceptance and use by the physician, has created a new problem for the anesthetist and causes real concern in the choice and conduct of an anesthetic. Few drugs, if any, are possessed of but a single action and often they find widespread use before their full spectrum of activity is appreciated. While knowledge of drug action and the effects of previously administered drugs is important to every physician, it reaches its peak in anesthesia. Probably no other medical specialist is called upon to administer, in his daily practice, such potentially lethal drugs as is the anesthetist. Recognition of drug action, and particularly interaction of two or more drugs is extremely important. All physicians who are concerned with the welfare of a patient should be cognizant that certain drugs may have an untoward influence on anesthesia and operation.

The Cortico Steroids—The widespread use of cortisone and its related compounds has produced a new clinical entity, iatrogenic adrenal insufficiency. Lundy was among the first to alert the anesthetists to the danger of cardiovascular collapse during the intraoperative and the post operative period in patients who had been on some form of steroid therapy.

Peculiarly enough iatrogenic adrenal insufficiency may not be solely a function of dose or time of administration. Instances of adrenal insufficiency have been reported in persons who have received only a few days of steroid therapy, and others report that even small doses of steroid may exhibit a dramatic effect. Suppression of the adrenal gland may be apparent after only one week of therapy, but usually it requires several months before such suppression is evident. The duration of the suppression is even more variable and may persist according to some authors for as long as two years after the cessation of therapy. Other disturbances of long term adrenal steroid therapy may range from teratologic abnormalities to severe disturbances in fluid and electrolyte balance.

The usual picture seen during anesthesia in these patients is one of sudden cardiovascular collapse. A sudden and persistent hypotension develops which does not respond to treatment with vasopressors or blood transfusion. Impairment of vascular tone and myocardial contractile force is evident in the patient with iatrogenic adrenal insufficiency (as well as the adrenalectomized patient) and it is almost self-evident that the response to exogenously administered vasopressors would be of little value. Patients who have been receiving steroid therapy may be treated prophylactically before operation by having the maintenance dose of steroid doubled for two or three days prior to operation, or by the administration of 100 to 150 mgm orally for two or three days preoperatively. In addition, 100 mgm of hydrocortisone should be administered one hour before the beginning of anesthesia. During the past several years we have resorted more to the use of the newer intravenous steroids and have prepared these patients by giving the maintenance dose only prior to operation, then 100 mgm of hydrocortisone the night before operation, and 100 mgm one hour before anesthesia. The anesthetist, who is aware of this problem, then has available in the operating room hydrocortisone for administration either by continuous intravenous infusion or by single injection of 100 mgm or more as the occasion arises.

Cardiovascular and Hypotensive Agents

A great deal has been written about the rauwolfia alkaloids (reserpine) and anesthesia. The fact that the drug is now known to result in depletion of peripheral stores of sympathomimetic amines led many to believe that the drug should be discontinued for some time prior to operation and anesthesia. More recent data indicate that this is not really necessary. It is contingent, however, upon the anesthetist to be fully aware of the fact that a particular patient is being treated with reserpine and great care exercised. Rapid induction as well as excessive depth of anesthesia must be avoided. The surgeon must studiously avoid any undue manipulation which may produce a reflex hypotension. Should the blood pressure fall it must be supported with vasopressor drugs. Good results have been reported by some following the intravenous injection of ephedrin (5-25

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mg). A review of our data does not lend support to the use of this drug and we still prefer phenylephrine by continuous infusion. If no response is obtained to either phenylephrine or methoxamine, nor-epinephrine is given to replenish depleted body peripheral stores.

Other drugs used in the management of hypertension may have a profound effect on the course of anesthesia. Ganglionic blocking and sympatholytic agents might be expected to potentiate the hypotensive effects of anesthetics. Hexamethonium, pentamethonium and mecanylamine may either exert some "curare" like action or bring about a modified response to acetylcholine. This does not necessarily preclude the administration of an anesthetic but the anesthetist must take great care in his choice of anesthesia, moving or positioning his patient, safeguarding against even small losses in circulating blood volume and using judiciously the vasopressor drugs. We should avoid the use of spinal or even epidural anesthesia in these patients because of the inherent danger of hypotension which may accompany the use of these techniques.

Chlorothiazide diuretics, often used in the treatment of hypertension may adversely effect the course of anesthesia in yet another way. The hypokalemia which may result in undue and prolonged respiratory depression or enhancement of curare effects. Infusion of potassium may readily reverse these phenomena.

The time honored digitalis glycosides may produce real difficulties. Over-digitalization or even full digitalization may produce in combination with general anesthesia a more irritable myocardia and cardiac arrythmias. Preoperative digitalization is safer than rapid intravenous digitalization just prior to or during operation, and there is some feeling among anesthetists that preoperative digitalization is of great value even in the non-failing heart, particularly in cases where the myocardia is subjected to stress or prophylactically in the geriatric patient. Recent evidence certainly seems to point to the fact that digitalis will leave no untoward effect on the normal heart.

The Tranquilizers—The anesthetist has long been aware of the fact that many of the tranquilizing drugs — particularly the phenothiazines will cause potentation or summation of the anesthetic effects. Chloropromazine, promethazine and to some degree propiomazine will in themselves produce varying degrees of hypotension and in some instances mild respiratory depression. This summation of effect is particularly noticeable when these drugs are used in combination with narcotics and the barbiturates, such as thiopental or thiamylal. Patients who have received phenothiazines will require up to 50% less of narcotic or barbiturate to accomplish the same therapeutic effect. While the central effects of these drugs are usually predictable, their effects on the cardiovascular system are less so and even very moderate amounts may produce a dramatic fall in blood pressure. This hypotensive state is aggravated by change in position, the administration of anesthetics (depressants) and by the use of curare-like drugs, and sympathetic block produced by spinal or epidural anesthesia.

The resultant hypotension may be rather easily corrected by using pressor drugs, the trendelenberg position or by leg wrapping. Frequently large doses of pressor drugs are necessary and in these instances we have found phenylephrin or metaraminal to be our drugs of choice.

Meprobamate is among the least pernicious in this regard although experiences with patients who have been on long term Equanil therapy have led us to treat these patients with caution. Certainly these reactions are not as adverse as those who have received chloropromazine.

The Antibiotics. Although long term administration of antibiotic drugs pose no problem, the intraperitoneal administration of some of these has resulted in fatal or near fatal sequelae. The intraperitoneal administration of neomycin may produce cessation of respiration or enhance a curare induced apnea. Streptomycin, dihydrostreptomycin, kannamycin and polymycin B all have a curare-like action — a non depolarizing neuromuscular block—which can be antagonized by edrophonium or neostigmine. More recently, too, we have been impressed by a prolonged action of succinylcholine in some patients who have received large doses of kannamycin.

The Anticoagulants. Suppression of the clotting mechanism for whatever reason may be of dire consequence. The initiation of any form of regional anesthesia (spinal, epidural, regional block) may produce untoward bleeding with disastrous results. In some instances the anticoagulant effect may be chemically reversed but otherwise appropriate time for restoration of a normal

clotting mechanism must be allowed.

In summary it is important for the anesthetist and the surgeon to be fully aware of any therapeutic regimen this patient is undergoing. The seriousness and frequency of complications that arise makes it mandatory that every patient be questioned carefully about all medication he may be currently taking or has taken in the past. In this era of poly-pharmacy and self-medication, one might be rather unpleasantly surprised and in some instances "put upon" in the operating theater to seek an explanation for a sudden crisis.

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Mesenteric Arterial Insufficiency and Abdominal Angina

L. Reiner (1276 Fulton Ave, Bronx, NY), *Arch Intern Med* 114:765 (Dec) 1964

Abdominal angina is presented as a disease of an intermediate grade in a broader spectrum of occlusive mesenteric artery disease which ranges from intestinal infarction at one extreme, to a fully compensated state, i.e., "silent" cases, at the other. The differential vascular pathology as related to various grades of circulatory decompensation is discussed within the framework of a larger postmortem study based on a technique of angioradiography and anatomic dissection of the mesenteric arteries. The preponderant vascular correlate of abdominal angina was one of occlusive disease of the mesenteric arteries involving the aortic ostia of two of the three main stems (celiac, superior mesenteric, and inferior mesenteric). In one patient, no occlusions were found, there was a stenosing disease involving the aortic ostia of all three main stems, and there were indications that a deterioration of the total cardiovascular status initiated vasculogenic abdominal pain without any change in the local vascular background. In one, there was ischemic ulcerative disease of the small and large intestine. Abdominal angina may terminate in intestinal infarction, but it has no outstanding propensity to do so.

MEDICAL GENETICS: TODAY AND TOMORROW**

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THE PURPOSE OF THIS ARTICLE is to discuss selected highlights of medical genetics today, hoping that the outline of medical genetics tomorrow will be apparent in the rapid development of the field to date. To achieve this purpose, let us first consider genetics itself, with examples relating genetics to disease.

Let us define genetics as the study of inheritance and follow E. B. Wilson in defining inheritance as "the recurrence in successive generations of like forms of metabolism." Although this is a satisfying definition, it is important to emphasize at this point that the human tendency to notice "like" forms only after the appearance of disparate forms draws our attention to the "likeness." Thus, the presence of inherited dwarfism (e.g. achondroplasia) in the human population points up a hereditary component in stature. William Bateson, an early geneticist, underlined the importance of such variants with this aphorism, "Treasure your exceptions." Let us then redefine genetics as both the study of variation and the study of inheritance. The prime questions of genetics are these: (1) How does variation occur? and (2) How are like forms transmitted from generation to generation?

Chromosomes and Disease

The answer to both questions lies in threadlike structures found in every cell—the chromosomes—which bear the genes. The genes, lined up along the chromosomes like beads on a thread, determine all the hereditary characteristics of the individual.

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**Presented at Arkansas Baptist Hospital on July 28, 1964.

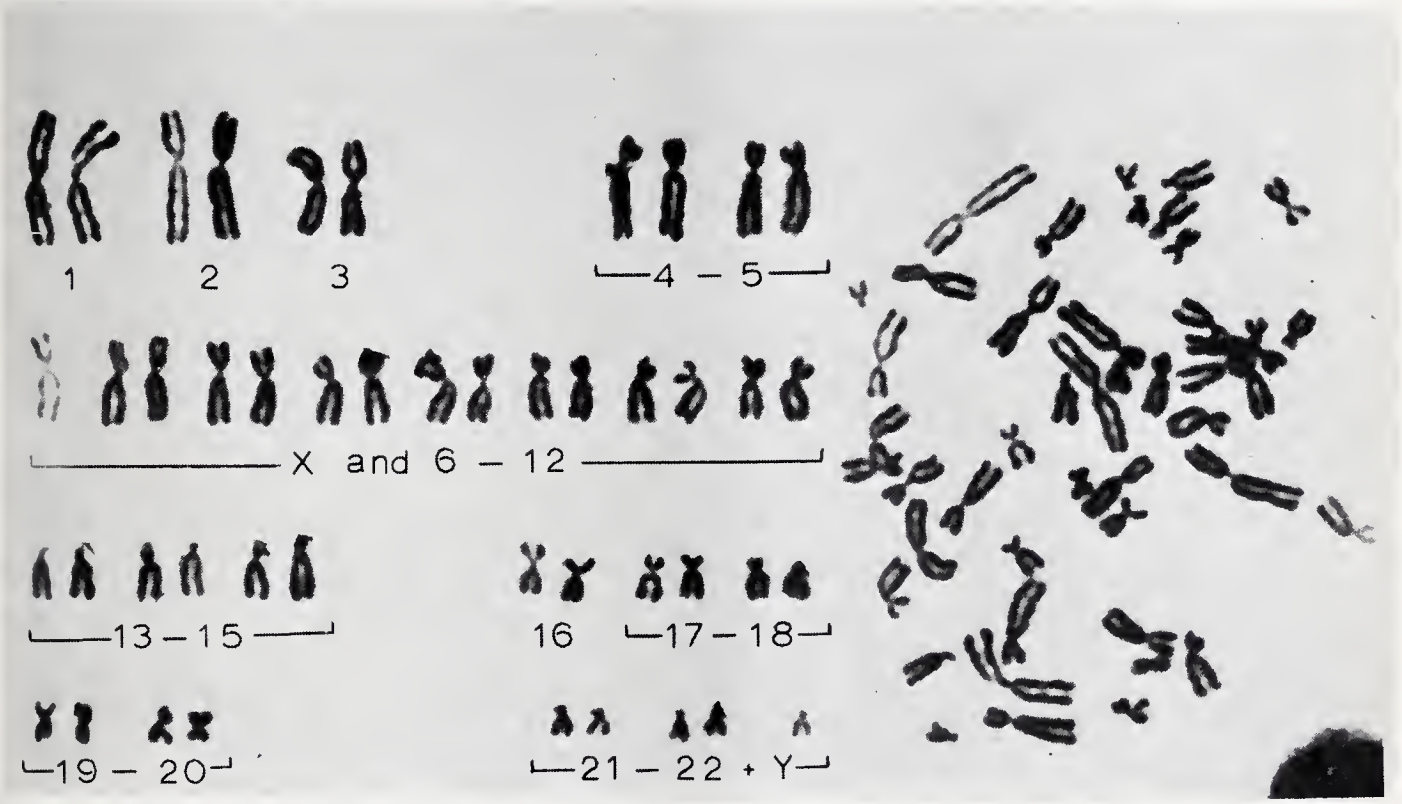


Figure 1: Part A is on the *right;* part B is on the *left.*

A. The chromosome complement of the normal human male. A photomicrograph of a squashed leukocyte, stopped during division by colchicine, fixed with acetic acid, and stained with aceto-orcein.

B. The chromosomes in part A have been clipped out and arranged according to size and shape into the characteristic pattern called a karyotype. Certain chromosomes are so similar in size and shape that they can be exactly classified only in unusually excellent preparations. This is indicated by the groupings. Notice that the X and 6-12 group contains 15 chromosomes, indicating the presence of *seven pairs* and *a lone X.*

Technical advances have recently made it possible to view the chromosomes of the normal dividing human cell. Figure 1A shows a photomicrograph of a typical preparation from the peripheral blood cells of a normal human male. Similar results are also obtained using marrow, skin, and other tissues. In most cells 46 chromosomes are visible. By treating the individual chromosomes from the picture like paper dolls and arranging them by length and shape, the characteristic pattern in figure 1B is obtained. Thus, the normal human male contains in most cells 22 pairs of matched chromosomes and one unmatched pair, of which the long member is called the X and the short, the Y chromosome. In figure 2 a similar cut-up from a photomicrograph of the chromosomes of a normal human female is shown. Such cut-ups are called *karyotypes* or *idiograms*. The karyotype of the human female has 22 matched pairs in common with the male and an additional matched pair of X chromosomes. The 22 pairs in common are called *autosomes* and the pair of X's (or XY of the male) are called *sex chromosomes*.

Although the human karyotype was viewed for the first time in 1956, large numbers of individuals were examined so rapidly that, by 1959, it was possible to detect a relation between a disease syndrome and an abnormal karyotype. Down's syndrome, or mongoloid idiocy, which occurs once in each 500-600 births and is typified by mental retardation, characteristic eye-lids, short stature, stubby hands and feet, open mouth, short nose, congenital heart malformation, etc. was shown by LeJeune and colleagues to be associated with the presence of an extra number 21 chromosome (figure 3). Apparently the extra dose of genes represented by this extra chromosome produces genetic imbalance and the defects mentioned above. The presence of an extra chromosome is referred to as *trisomy*.

The number 21 chromosome is also involved in

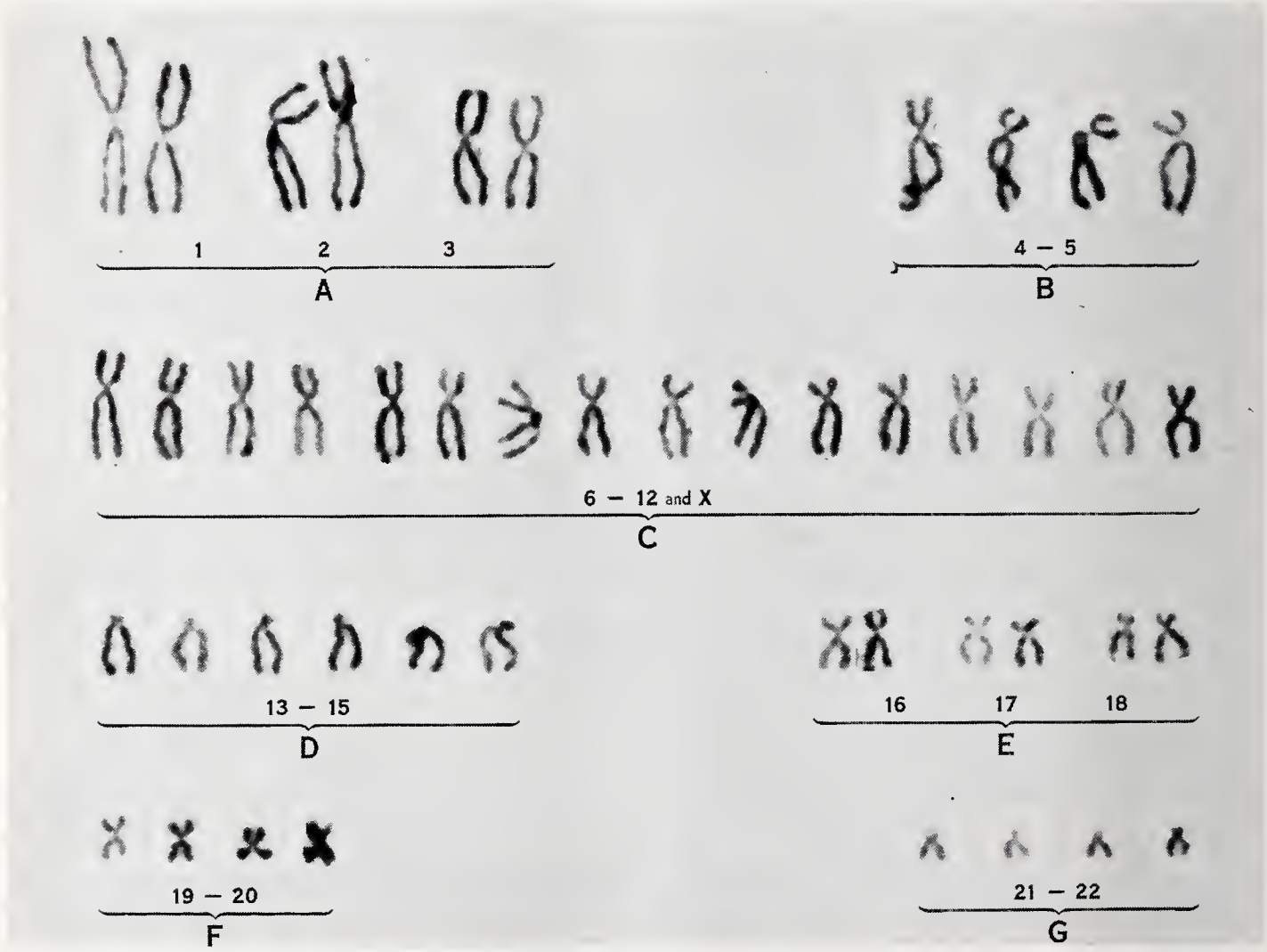


Figure 2: The chromosome complement or karyotype of the human female. This photograph was prepared by the same procedures as figure 1B. Notice that the group 6-12 and X contains 16 chromosomes, the same *seven pairs* as in figure 1B and *a pair of X chromosomes*.

chronic myeloid leukemia. In individuals who have this leukemia the karyotype of most cells is normal, but the leukocytes have an abnormally small number 21 chromosome as shown in figure 1. The small size results from the deletion of part of the chromosome's length. The accidental loss of these genes by a stem cell in the myeloid marrow very likely leads to uncontrolled cell division, which we then see as chronic myeloid leukemia. It is important to stress that chronic myeloid leukemia is not an inherited disorder of the individual that will pass through successive generations, but rather a defect within the cells of the individual spreading by means of cell division.

Another area where chromosome studies have led to better understanding is sex determination. The normal human male (figure 1B) is characterized by an XY sex chromosome karyotype, and the female (figure 2), by an XX karyotype. Note that the X chromosome is much larger than the Y. In 1959, several geneticists independently introduced a startling hypothesis as to why this large excess of genes in the human female does not lead to a genetic imbalance such as we see in Down's syndrome. They suggested that in the female within each cell a large portion of the genes of one of the two X chromosomes is genetically non-functional. Which X chromosome is fully active and which one is mostly (or wholly) non-functional is determined randomly within each cell. As a result, the female is a mosaic of two types of cells, distinguished by which X chromosome is fully active. This mechanism prevents genetic imbalance by maintaining the female at the same level of genetic activity as the male, and at the same time, since the female has *two* types of cells and the male, *only one,* the female is at a genetic advantage with respect to the X chromosomes. This genetic advantage probably contributes to the female's greater longevity.

These ideas are called the Lyon Hypothesis, named for Dr. Mary Lyon and explains among other things a sex difference observed earlier by Dr. Murray Barr. In non-dividing cells, the chromosomes cannot normally be visualized. But in such cells from females, Dr. Barr noticed a

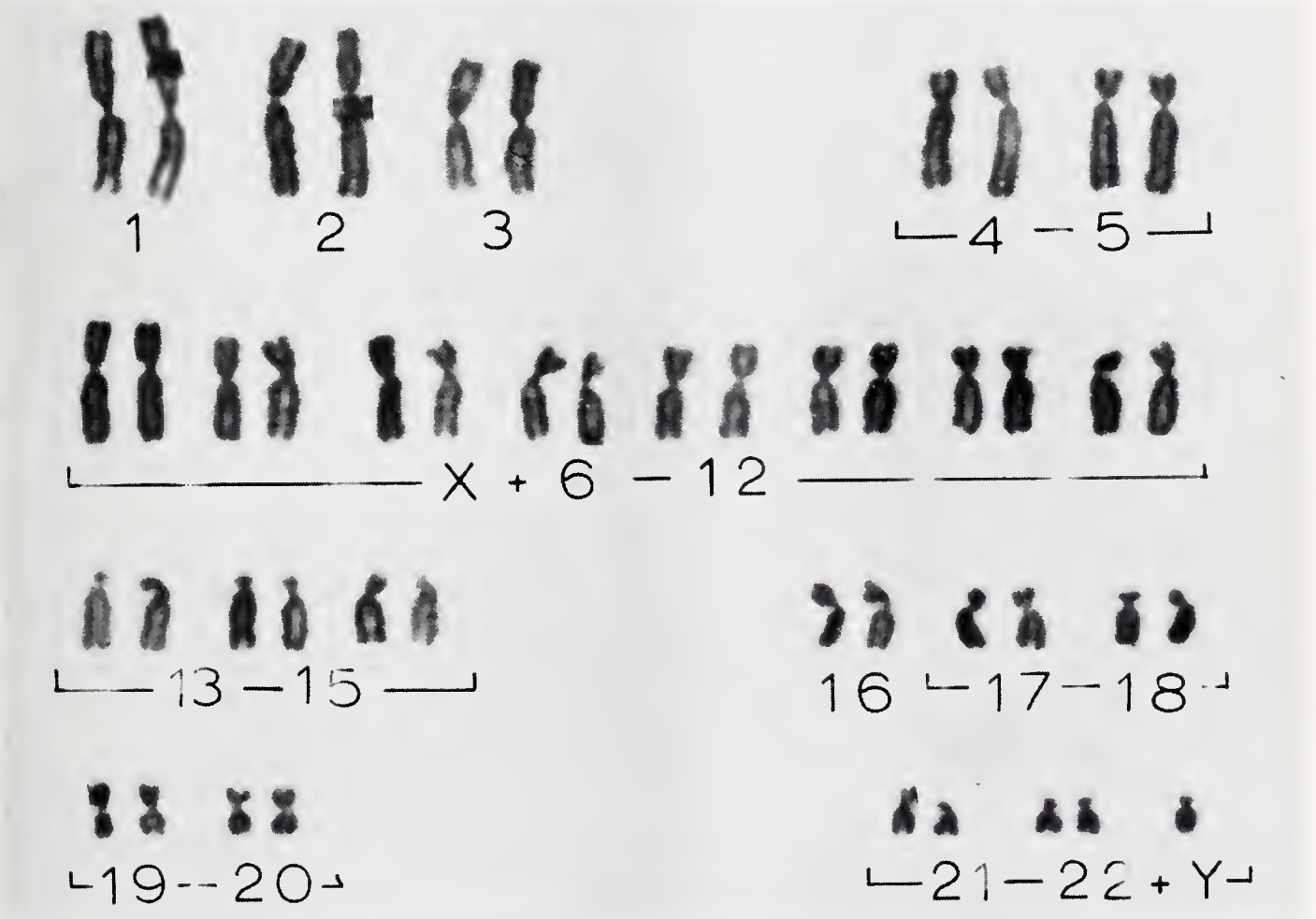


Figure 3: The karyotype of a male mongoloid idiot. Notice the group 21-22 + Y, which contains a *pair for number 22*, a *single Y chromosome*, and *three number 21 chromosomes*.

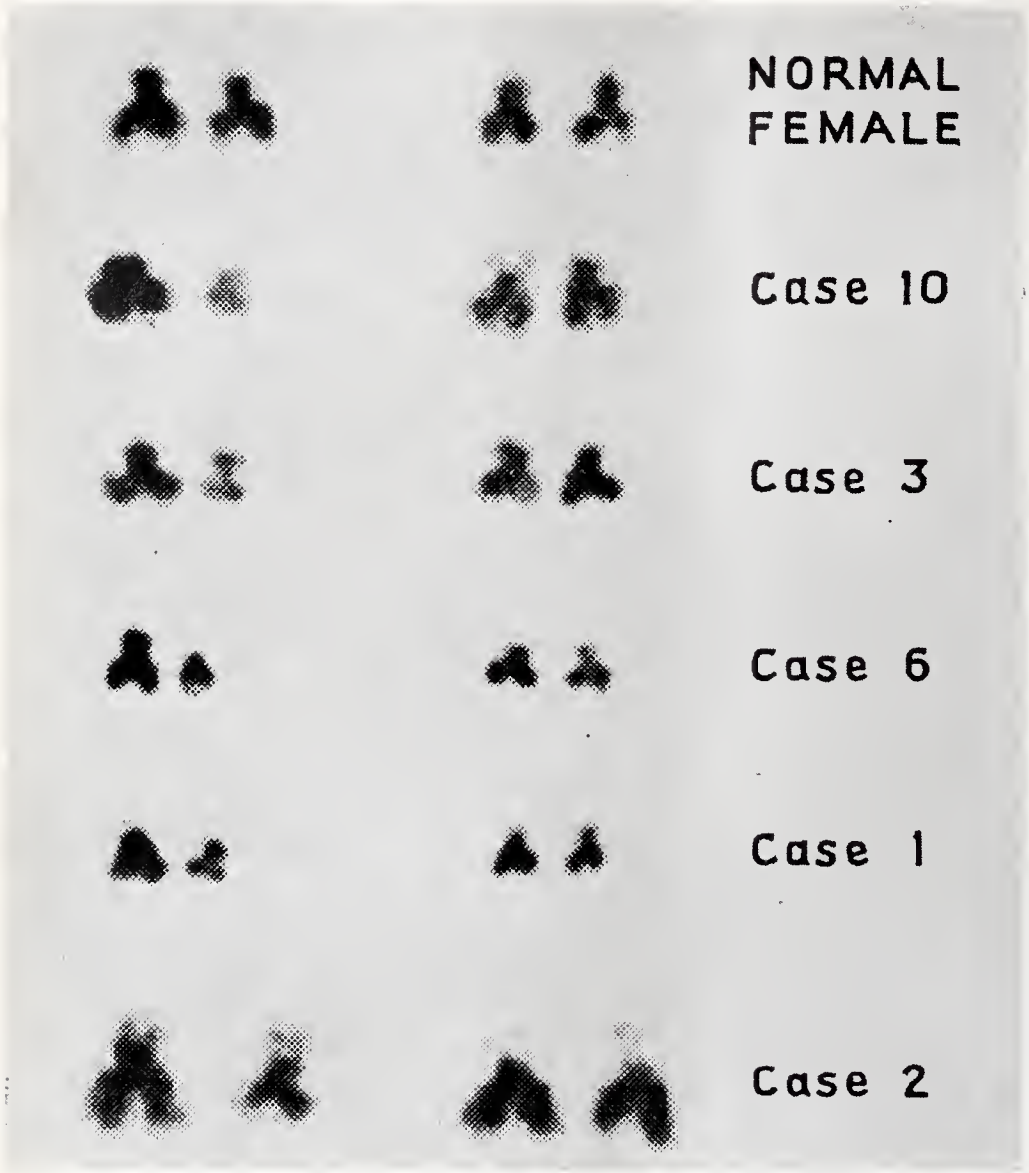


Figure 4: An abnormal chromosome associated with chronic myeloid leukemia. Photomicrographs of the chromosome complement were prepared using leukocytes from individuals with chronic myeloid leukemia and cut up as in Figure 1B. The number 21 and 22 chromosome pairs of five females with the disease are compared to a normal female's chromosomes. Case 2 has been enlarged to bring out more details. The unusually tiny number 21 chromosome, called *The Philadelphia chromosome,* is only found in the leukocytes. From Tough, I., *et al.,* 1961, Lancet 1:411.

chromosome-like body in one corner of the cell (figure 5). This Barr body or sex chromatin body represents the non-functional region of one X chromosome of the female's two X's; left out of the cell's activities, this region has—so to speak—curled up in the corner to sulk. Since normal males do not have a Barr body in their non-dividing cells, and normal females do; the sex chromatin body represents a diagnostic sex difference.

Now let us apply this information to individuals of abnormal sex characteristics. Figure 6 shows Turner's syndrome, a female gonadal aplasia or ovarian agenesis, typified by short stature, shieldlike chest, webbing of the neck, coarctation of the aorta, amenorrhea and poor secondary sexual development. Although these individuals are basically female, buccal smears lack the Barr body of the normal human female. As this observation suggests, the karyotype found in Turner's syndrome (figure 7) shows a sex chromosome abnormality, the presence of solely an X chromosome with no accompanying second X or Y. Hence this XO (read as X null) sex chromosome karyotype may be seen to be basically female, but with many defects resulting from the lack of a second sex chromosome. There is a related syndrome in males (figure 8), Klinefelter's syndrome, which occurs once in each 400 male births. Characterized by long-leggedness, enuchoidism and gyncecomastia, this syndrome accounts for many mental defectives and fertility clinic patients. Although of male form, Klinefelter's individuals possess the Barr body typical of normal females; and the sex chromosome karyotype is XXY (figure 9).

It is curious that in Drosophila (the fruit fly) where sex chromosomes were first observed, while XX and XY lead to normal female and normal male, respectively, as in man, XXY is an abnormal female and XO is an abnormal male,

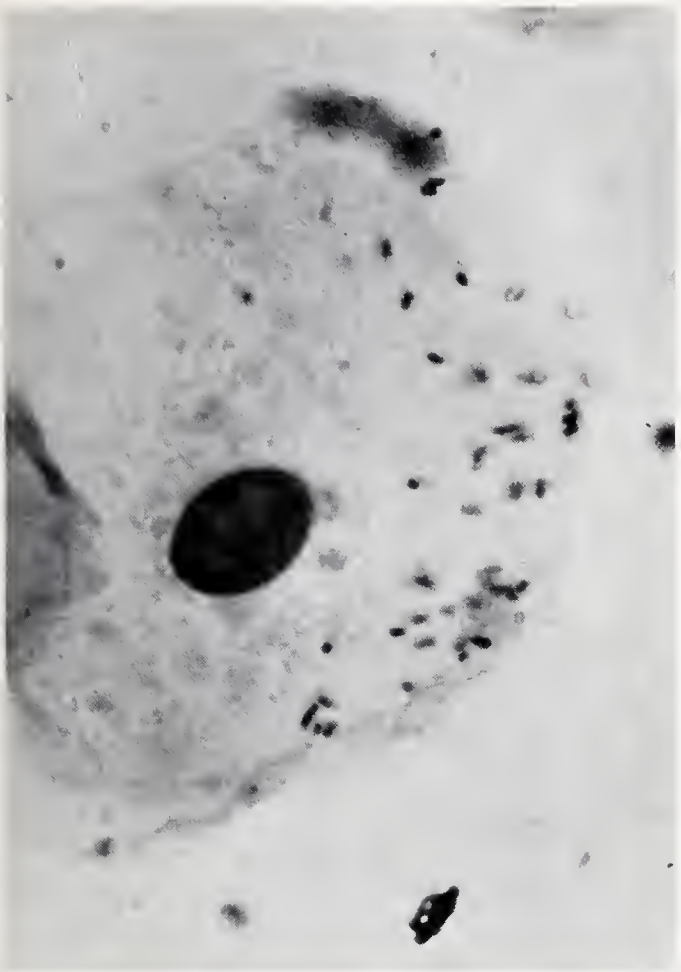


Figure 5: The Barr body or sex chromatin body in the normal human female. Cells from a buccal smear were fixed with acetic acid and stained with the Feulgen reagent. A single cell is shown, with the Barr body visible as the darker staining area in the bottom-left portion of the nucleus.

exactly the opposite from the situation in man. Thus, in man the Y chromosome appears to be the primary sex determinant, its presence leading to maleness, its absence, to femaleness; yet, in the fruit fly the X chromosome is the primary sex determinant.

New Methods of Analyzing for Genes

Using the chromosomes as a starting point let us discuss the effects of the individual genes. First, let us examine how the genes are passed from one generation to another. This occurs through the processes of *meiosis* and *fertilization*. Meiosis is a specialized form of cell division in which the *gametes* or sex cells are formed. The chromosomes line up in the same pairs which had been arranged for us to view in the preceding karyotypes by playing paper dolls. Then they proceed to separate in an orderly fashion so that the egg or sperm receives in cell division one member chosen at random from each of the 23 pairs of chromosomes. This process represents the segregation and independent assortment first noted for genes by the Austrian monk, Gregor Mendel. In fertilization the gametes unite, and the typical karyotype of 23 chromosome pairs is restored, with one member of each pair coming from the father and one from the mother. Since genes at corresponding positions of the chromosome affect the same trait, each individual receives in normal fertilizations two genes per trait, one paternal and one maternal. (The chromosomal abnormalities discussed earlier are usually the product of abnormal meiosis or fertilization.) If the genes are alike in effect, the child is said to be *homozygous* for the trait in question; if they differ in effect, the individual is *heterozygous* for the trait in question. A major problem in genetics is that we are unable to examine the genes directly and cannot always decide whether an individual is heterozygous or homozygous. Instead, we must look at the trait, itself. To distinguish the form from the inheritance, we use the term *phenotype* to characterize the trait or traits that can be seen, and the

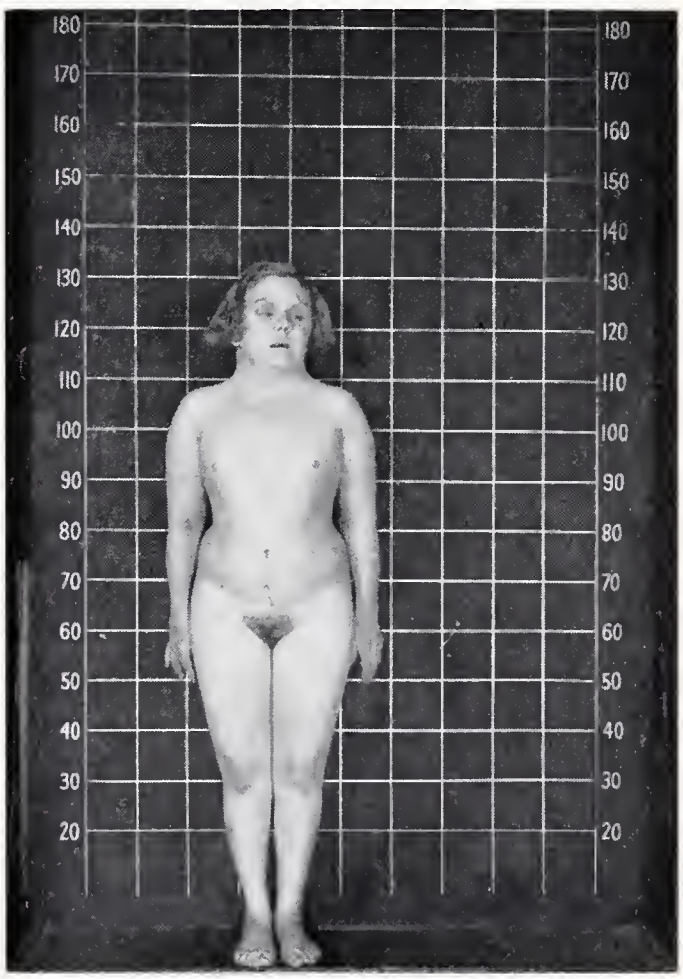


Figure 6: A Turner's syndrome female. Note the presence of the hallmarks described in the text. The scale in the background is in centimeters.



Figure 7: The karyotype of a Turner's syndrome female. Note that the single X chromosome (top row-right) is not accompanied by a Y chromosome or a second X. This is referred to as an XO karyotype.

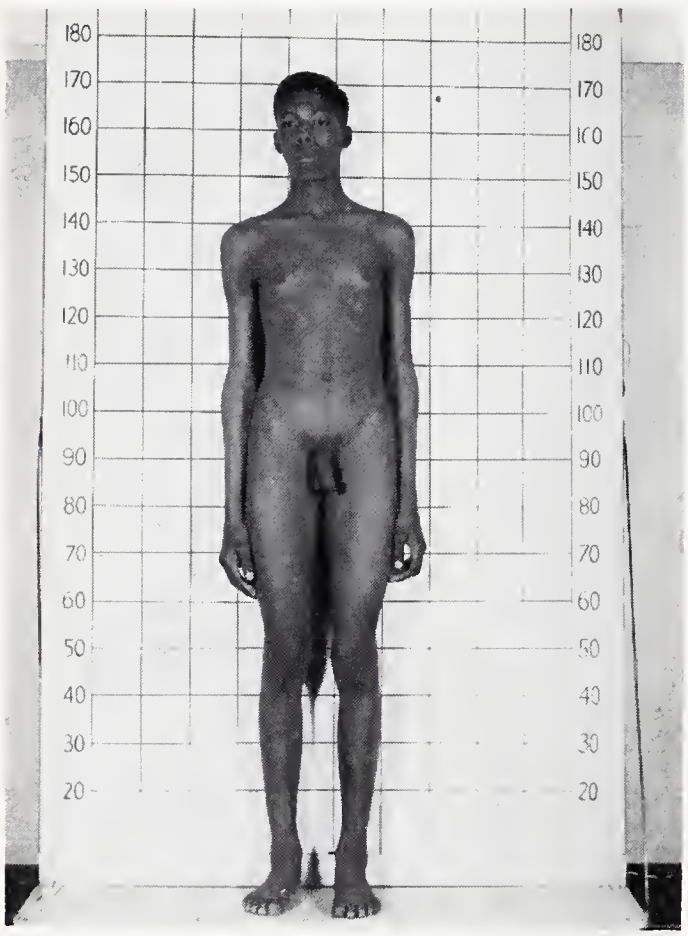


Figure 8: A Klinefelter's syndrome male. Note the hallmarks described in the text. This figure has been previously published in *J. Chronic Diseases* (July 1960) and in *Medical Genetics 1958-1960* (C. V. Mosby 1961) and is reproduced with permission.

term *genotype* to characterize the genes the individual has for the traits. Dr. Victor McKusick has compared these terms to the words *character* and *reputation*. *Genotype* and *character* denote what *is; phenotype* and *reputation* denote what *appears* or can be seen. The terms *dominant* and *recessive* were introduced in relation to this distinction. They apply to traits, not genes, with a dominant trait being one that is observed in a heterozygous individual (heterozygote) and a recessive, one that may only be observed in a homozygous individual.

Let me illustrate the distinction between traits and genes by an example. There are two basic ways of analyzing to determine whether an individual is heterozygous or homozygous for a particular trait. One way (next section) involves examining the family tree or pedigree and deducing genotypes from its pattern. This method is called *genetic analysis*. The other method is so new that it is, as yet, unnamed. It involves examining the individual closely at a number of physiological or metabolic levels to look for traits on each of these levels which give evidence for the presence of a particular gene. Since it involves examining the form or phenotype, I propose to call this *phenetic analysis*. Here is an example.

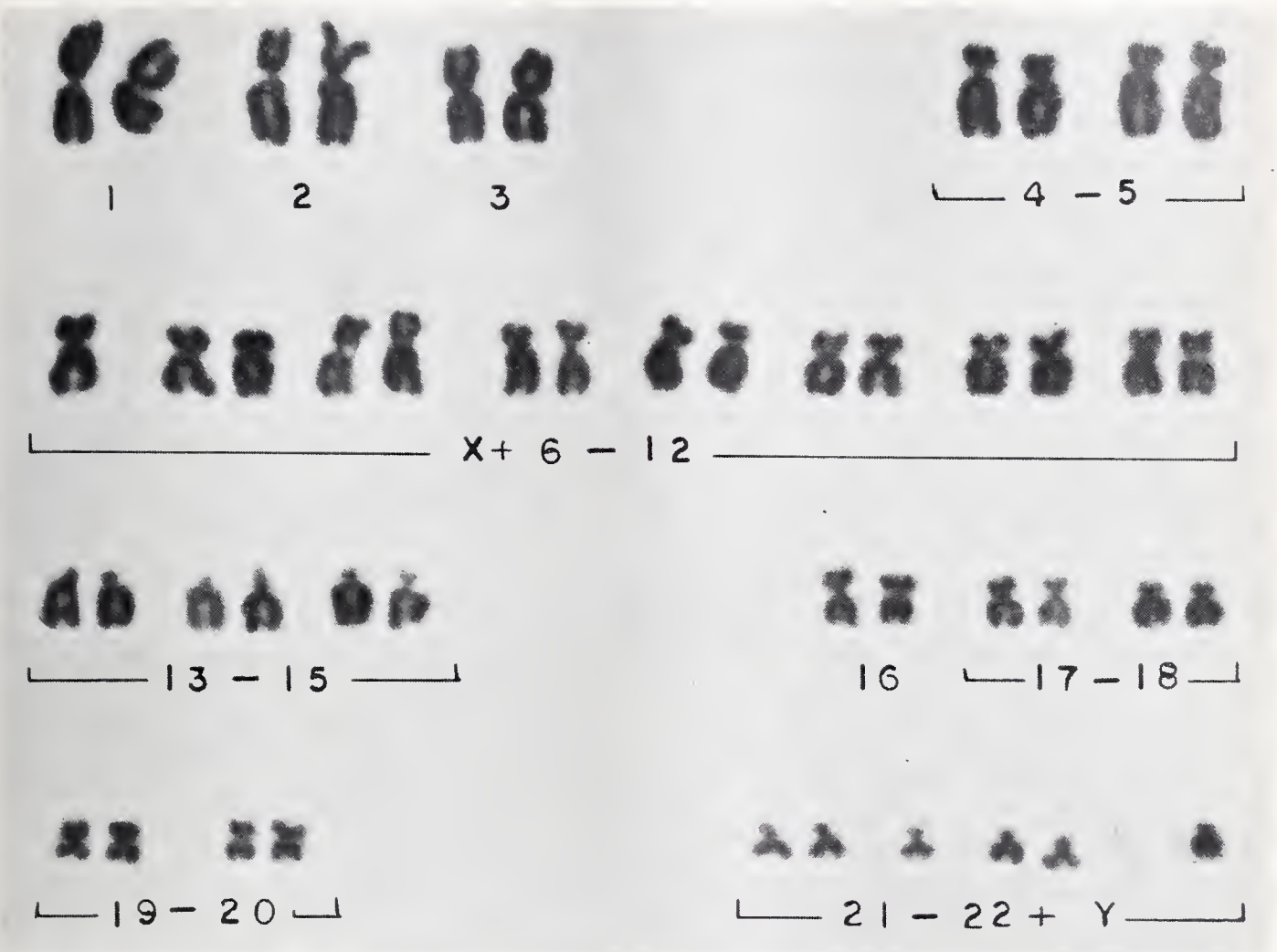


Figure 9: The karyotype of a Klinefelter's syndrome male. Note that there are two X chromosomes (X+6—12 has seven pairs plus a pair of X's) and a Y chromosome (bottom row-right). This is referred to as an XXY karyotype.



Figure 10: Electrophoretic analysis of hemoglobins. Blood was obtained by venapuncture; then the erythrocytes were separated from plasma by centrifugation and hemolysed. Cell debris was removed by centrifugation and the hemolysates were placed in slits in a gel prepared from starch in a buffer at pH 8.6. The hemoglobins were allowed to migrate in an electric field of about 5 volts/cm in the cold overnight. The hemoglobins migrated from bottom to top. Since the hemoglobin of AA individuals is more highly charged it migrates faster and farther (left) than the hemoglobin of SS individuals (center). Hemoglobin from AS individuals (right) clearly consists of two components, one like that of AA's and one like that of SS's.

Normal human hemoglobin is determined by the gene *beta* A or A. In the Negro population, one occasionally finds the gene *beta* S or S. Therefore, there are three possible genotypes, homozygous AA, homozygous SS, and heterozygous, AS. How can we distinguish the three types? At one level of analysis, the disease state, the AA and AS individuals are essentially normal, while the SS individuals are subject to sickling disease, marked by periodic hemolytic crises, ulceration, possible heart failure, enlarged spleen, edema, etc. At this level, as the AA and AS are indistinguishable, we say that the A trait is dominant; the S, recessive, since we cannot see an effect of S in the heterozygote. At the level of the erythrocyte or red blood cell, however, a different situation emerges. In the bisulfite reduction test, the cells from an AA maintain the normal biconcave disc shape, but cells from AS and SS types form a crescent, from which the term *sickling* comes. Here, we may say that the S trait is dominant, and the A recessive as we see only the effect of the S gene in the heterozygote. Finally, at the level of the hemoglobins, themselves, analyses can be performed using the new technique of electrophoresis just being introduced into laboratories for hematology. In figure 10, it can be seen that the effects of both the A and S genes are visible in the heterozygotes, who possess two kinds of hemoglobin. This situation, where the heterozygote has properties in common with both homozygotes, is referred to as *codominant*.

Now, as Dr. Charles Thomas used to say, "what's the take-home story?" Here there are several: (1) In phenetic analysis it should ultimately be possible always to distinguish heterozygotes. In the case above, the AS individual may be distinguished from AA by the sickling of the erythrocyte, and from the SS by the absence of certain disease symptoms. Further, at the homoglobin level, all three types may be distinguished. Geneticists presently believe that it should someday be possible to find a level of phenetic analysis (generally by analyzing proteins) where one can always distinguish whether an individual is a heterozygote or a homozygote. (2) Genes are not themselves dominant or recessive; the traits they determine are. In the case above it would be unwieldy to try to say that the gene for A is dominant if you look for disease, and recessive if you look at red blood cells. This distinction is one where geneticists occasionally get careless and refer to a dominant (or recessive) gene instead of saying properly a dominant (or recessive) trait. (3) Dominant traits cannot spread through a population simply because they are dominant. A heterozygote has received two different genes, but if we are unable to analyze fully his phenotype, we will often see only the effect of the dominant trait. As a result we may believe that the recessive trait has been lost. As genetic analysis showed in the early 1900's, and the phenetic analysis of the AS heterozygote has shown above, the heterozygote still possesses the gene for the recessive trait and is able to pass it onto progeny.

There is also a fourth "take-home story" which requires some further background. It is that the effect of genes depends on the environment in which they exist. In 1954 Alison showed that the geographic distribution of the S gene closely paralleled the distribution of *Falciparum malaria*. Working from this strong hint, a number of researchers soon demonstrated that the AS heterozygote was much more resistant to malaria than the AA homozygote. Thus, in Africa, prior to modern use of anti-malarials and anti-mosquito measures, the disease state distinguished all three genotypes. AA's died of malaria; SS's, of sickling disease; and only AS's survived. For this reason I should have stated earlier, "*In America* . . . at the level . . . of disease . . . AA and AS individuals are essentially normal . . ."

Genetic Analysis

Someday we hope to be able to determine genotype by phenetic analysis. Presently we rely on genetic analysis, where, by examining a family tree or pedigree and using probability and logic, we deduce who has what genes. Because of such limitations as small family size, uncertain parentage, and random, as opposed to controlled, mating genetic analysis is limited in its application to humans. Even with the aid of computer programs and large numbers of personnel, progress is very slow. Rather than detailing these approaches, let us, instead, examine some of the characteristic patterns of inheritance and the properties of pedigrees which are diagnostic in nature.

Marfan's syndrome, which has been most critically examined by Dr. Victor McKusick, is typified by elongated limbs, arachno-dactyly, pectus excavatum, loose-jointedness, aortic regurgitation,

and other cardiovascular complications. In figure 11 the appearance of this syndrome is traced through a pedigree. It is a typical dominant trait. Note that affected individuals appear in both horizontal and vertical dimensions, that approximately equal numbers of males and females are affected, and that about half the progeny of affected individuals are in turn affected. It is very rare that the children of unaffected siblings are affected. These are the hallmarks of a dominant trait.

Thus far, no one has observed the progeny when two Marfan's affected individuals marry. Achondroplastic dwarfs, who bear another typical dominant trait, frequently marry, however. As expected from Mendelian theory, ¼ of the children are normal and ½ are dwarfs. The remaining ¼ are phocomelic, resembling closely the thalidomide babies. Indeed, the term phocomelic was first introduced to describe these children long before the time of thalidomide babies.

A typical recessive trait pedigree, myoclonic epilepsy, is shown in figure 12. Note that affected individuals are found primarily along the horizontal dimensions (cousins and siblings) and rarely along the vertical dimensions, that males and females are affected with approximately equal frequency, and that progeny of affected individuals are not usually affected. Consanguineous mating (marriage of related persons) frequently produces children affected by a recessive trait, especially in the case of rarely observed traits. Unaffected parents who have a child with a recessive trait are nearly always heterozygous for the gene in question and are called *carriers*.

Recessive traits frequently turn out to be "inborn errors of metabolism" as were those described by Sir William Garrod in 1908. Alcaptonuria, cystinuria, albinism, and phenylketonuria were the four traits that he examined in studies that led to the present science of biochemical genetics. Phenylketonuria or PKU, for example, is the result of an inability to metabolize normally the amino acid, phenylalamine. This, in turn, causes the accumulation of unusual derivatives of this amino acid in the urine, from which derives the name, *phenylketonuria*. In the developing infant these same compounds lead to brain damage, so that PKU is one of the commonly found causes of mental defectiveness. The development of clinical tests for urinary phenylketones has made possible the detection of PKU in newborn infants. By placing them on a diet with limited intake of phenylalamine, brain damage can be prevented. After a critical period of mental development has passed, they may return to a normal diet. The oldest of the individuals who have been saved by this diet are now in their early teens. Soon some of the girls will be mothers. It is *critical* that *these girls be traced* and *placed* back on *such a diet*, since they still accumulate phenylketones, and it is very likely that these compounds can cross the placenta and damage the mental development of the fetus *in utero*.

Another pattern of inheritance is found for the sex chromosomes. Since the X chromosome has many more genes than the Y, females have more genes than males. As a result, the female can be heterozygous or homozygous for a gene pair on the X chromosomes, but the male has only one

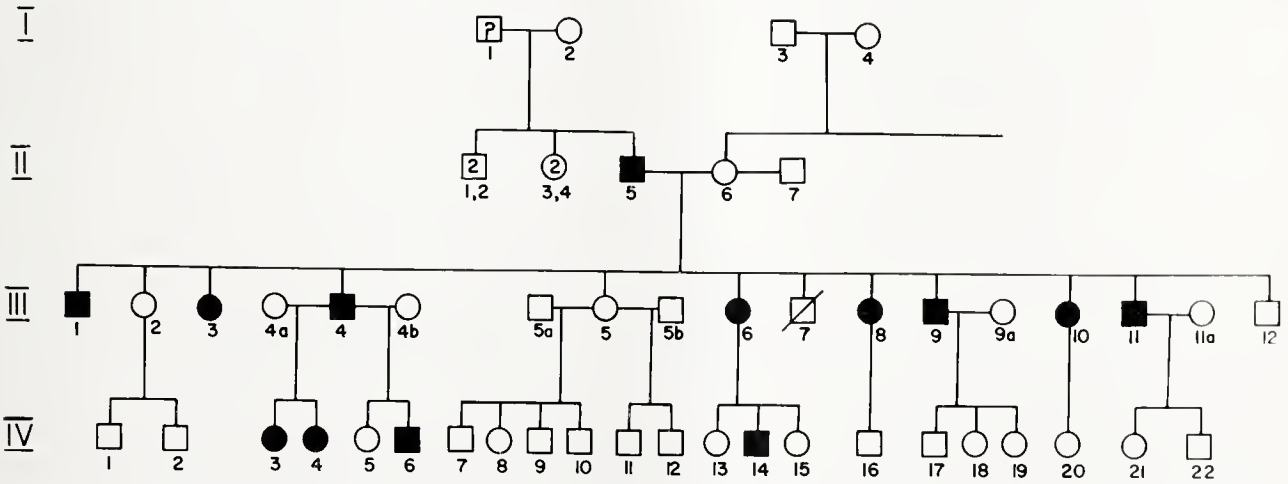
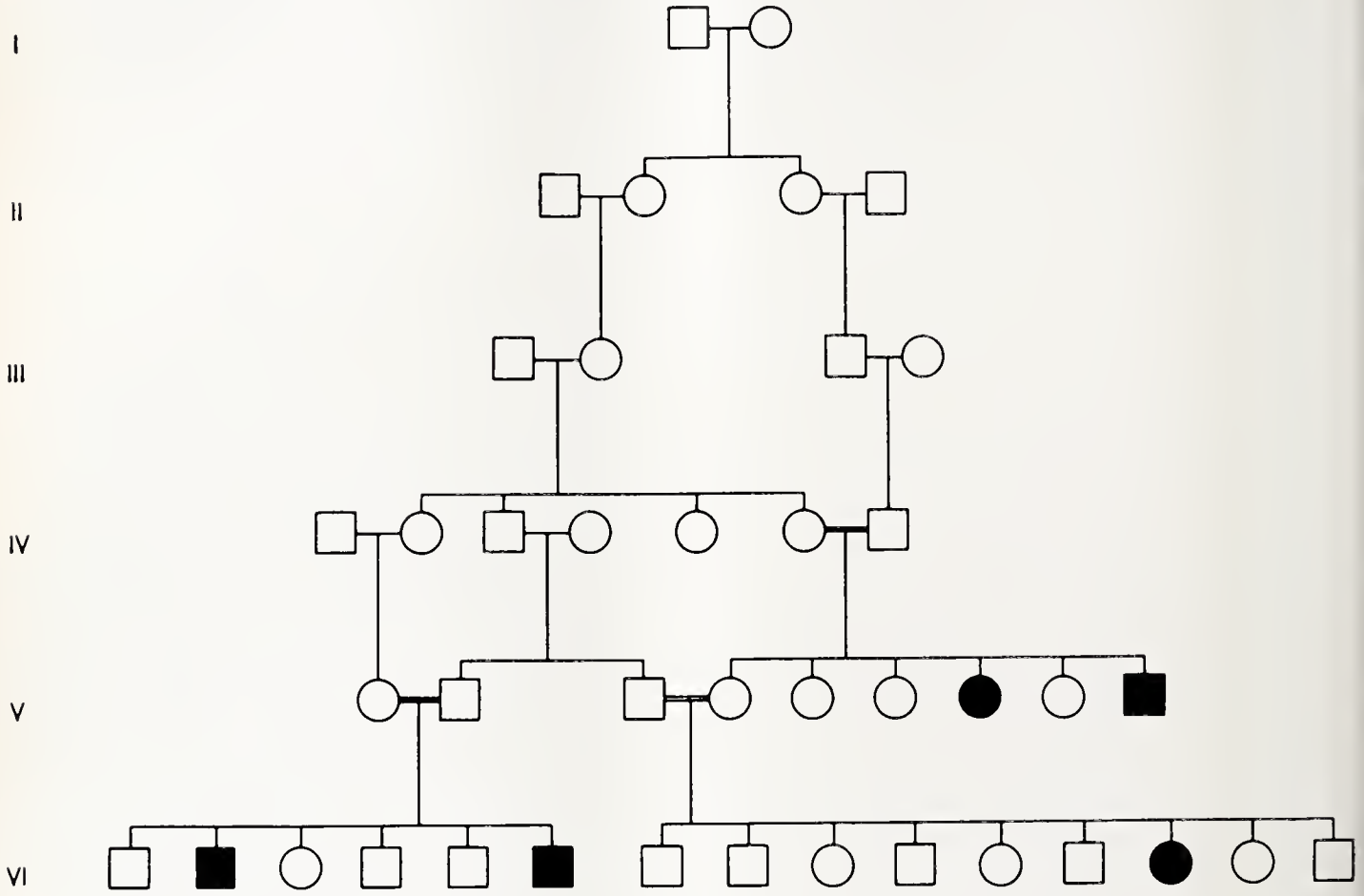


Figure 11: A pedigree (family tree) demonstrating the inheritance of Marfan's syndrome. Squares indicate males; and circles, females; horizontal lines indicate marital or brother-sister (sibling) relations. Vertical lines indicate parent/child relations. Shaded symbols represent clinically affected individuals and unshaded symbols, normals. Symbols with an arabic number in them indicate more than one individual of a type.

Figure 12: A pedigree demonstrating the inheritance of myoclonic epilepsy. The symbols are explained in the legend for figure 11. A doubled horizontal line indicates the marriage of related individuals.



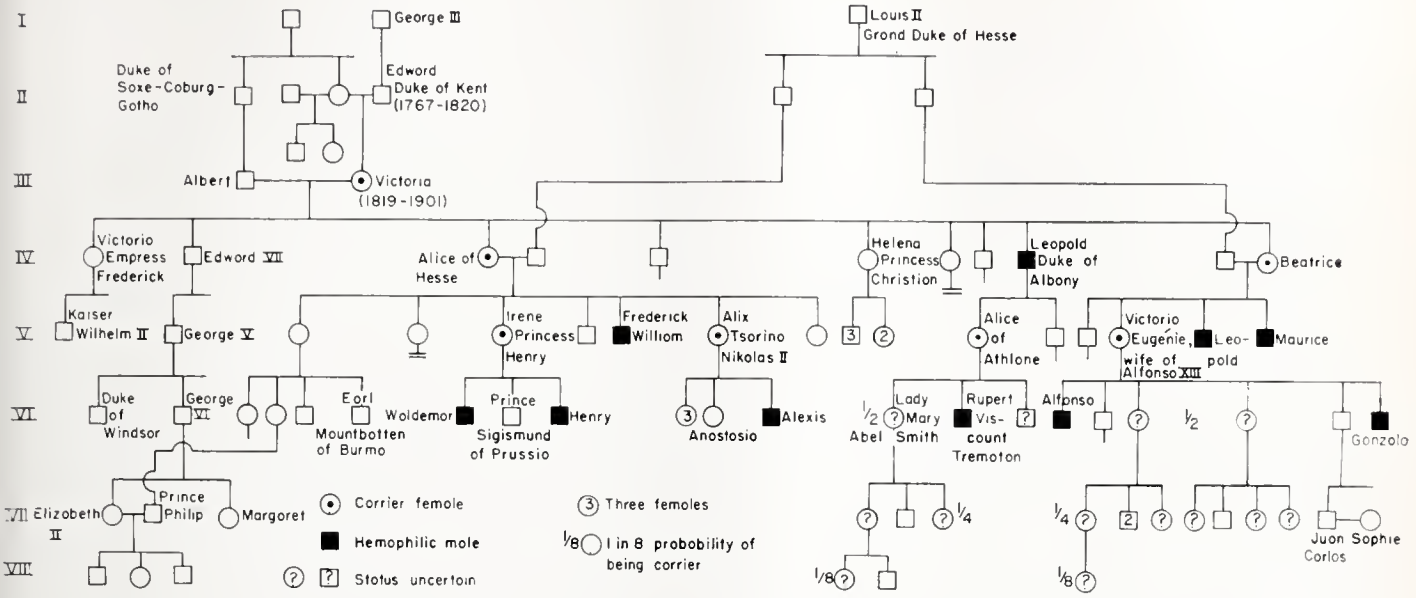
X and is, therefore, referred to as hemizygous for genes on the X chromosome. Moreover, fathers determine the sex of children, passing on their X chromosome only to daughters, while sons receive the Y chromosome. Mothers can donate an X to either a son or a daughter. As a result, the genes on the X chromosome show restricted patterns of inheritance, referred to as *X-linked*. The lack of male to male transmission is the mandatory characteristic. Figure 13 shows hemophilia, a typical X-linked recessive trait in a pedigree of the royalty of Europe. Note that women are carriers of the trait and their sons, brothers, and fathers are affected. In this particular pedigree Queen Victoria contributed to the demise of the Russian, Spanish, and Prussian ruling families. Long-term biological warfare, perhaps? The first known medical recognition of the pattern of X-linked inheritance is found in the Talmud in a reference that clearly apprehends hemophilia by advising that circumcision be omitted for boys whose older brother, maternal uncle, or grandfather has exhibited a bleeding tendency.

Figure 14 depicts the inheritance of vitamin-D resistant rickets, an X-linked dominant trait. Note that there is no father-to-son inheritance and that the disease is twice as common in women than in men; whereas X-linked recessives occur much more frequently in men than in women.

It is important not to confuse X-linked traits with sex-limited diseases. Such confusion occasionally occurs because X-linked recessives are found more frequently in men and X-linked dominants are found more frequently in women. For example, cervical cancer is not found in men, but this particular sexual bias in the occurrence of disease obviously does not point to X-linked inheritance.

Many traits are X-linked; common examples in addition to hemophilia and vitamin-D resistant rickets are colorblindness, Duchenne's muscular dystrophy, and Christmas disease. The presence of so many genes linked on a single chromosome points up a common error, the confusion of genetic linkage with syndromal relations or blood group association. Two traits always found in association with the same disease syndrome, such as pectus excavatum and arachno-

Figure 13: Hemophilia and European royalty. The symbols are explained in the legend for figure 11 and in the lower portion of this figure.



dactyly in the Marfan's syndrome or ulceration and red blood cell sickling in sickling disease are separate symptoms of the same genetically determined syndrome. Two traits which exhibit related patterns of inheritance such as colorblindness and hemophilia, but are found separately much more frequently than together are examples of genetic linkage. Correlation of the blood groups or biochemical types with disease, e.g., type O with peptic ulcer of the duodenum, or hemoglobin AA type with malaria in Africa, indicates that individuals of the specified type have a lowered resistance or predisposition to the disease in question, not that, say, malaria and hemoglobin A are caused by the same gene.

Genes and Medical Problems

In conclusion, let us discuss genes in relation to the three classic questions of medicine—what is wrong? What effects will it have? What can be done? To each of these three questions it should be noted that the geneticist and the curious physician would append the question—why?

First, then, 'what is wrong?', or diagnosis. In addition to the standard approaches for taking a history and making a diagnosis, some of the following suggestions may prove useful where a genetic problem is suspected: (1) If a chromosomal anomaly is suspected, what was the age of the mother at the child's birth? Older mothers have a much higher frequency of mongoloid births than younger women. Chromosome studies of the affected individual and the rest of the family may be in order. In some rarer forms of, say, mongolism, such studies may indicate the likelihood of the birth of more mongoloids. (2) Always inquire as to whether the observed trait is familial, and especially whether milder symptoms have occurred in other members of the family. (3) In cases where preliminary evidence indicates X-linked inheritance, for example, hemophilia, tests

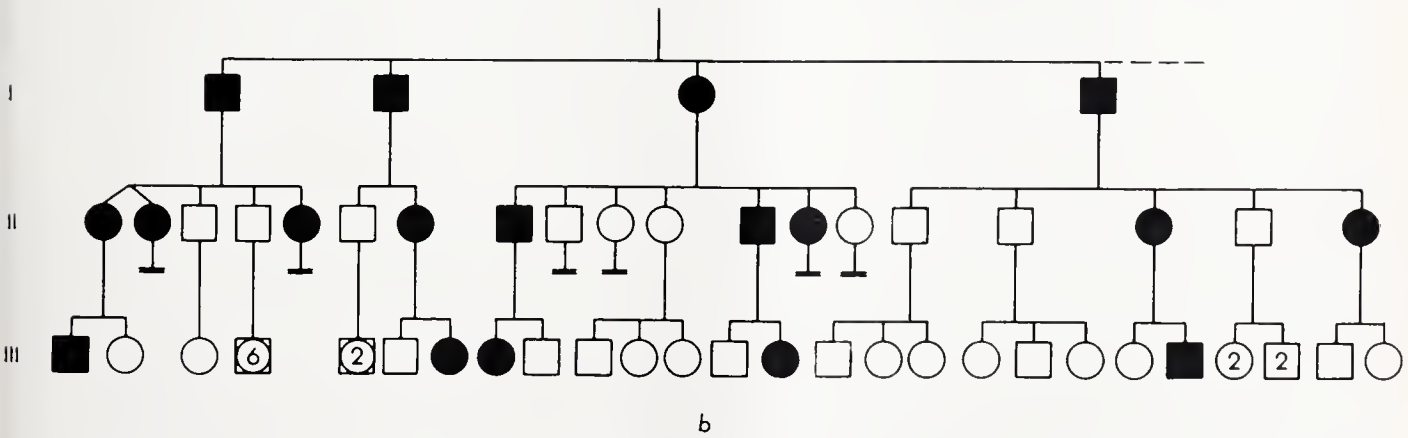


Figure 14: Inheritance of vitamin D resistant rickets. The symbols are explained in the legend for Figure 11.

on the maternal grandfather and uncles are in order. In addition, little lab time should be spent on more than a cursory survey of the father's side of the family. (4) Biochemical typing of the parents is often called for. An SS individual is usually the child of AS x AS mating and this will be detectable by electrophoresis; similarly, the carrier status of a PKU's parents may be detected in a phenylalamine tolerance blood test. (5) In the case of a suspected recessive trait, the possibility that there is consanguinity between the parents should be investigated. (6) It is also important that possible bastardy be considered in making a genetic diagnosis. Comprehensive blood typing of the parents and the child is useful in this instance.

After diagnosis 'what will be the effect?', or prognosis. Again the recommendations listed are intended primarily as additions to the standard approaches. (1) In many cases there is a need to explain that genetic disease involves a "genetic lottery" with no disgrace, retribution for misbehaviour, or "bad blood". For example, it was recently suggested that Nancy Hanks, Abraham Lincoln, and Thomas Lincoln suffered from Marfan's syndrome. In a letter to *Newsweek* (June 25, 1962), an irate reader insisted that Lincoln could not have suffered from such a 'loathsome disease' "Hereditary disease is no more loathsome than poliomyelitis, myocardial infarction, and cerebral arteriosclerosis, which have affected other presidents", was Dr. Victor McKusick's reply. (2) The likelihood of the birth of another affected individual is of immediate concern to the family. The mode of inheritance and likelihood of bastardy must be known to make reasonable predictions. For example a normal brother of a hemophilic cannot pass on the bleeder trait. In the case of anomalies involving whole chromosomes, chromosome studies of the entire family will frequently make it possible to predict whether there is little or considerable chance of another occurrence. Finally, testing of brothers and sisters of affected individuals to see if they are carriers (as in PKU or S hemoglobin) is of use. In many of these cases, such knowledge could influence the marital choices of the carrier. If the knowledge does not serve as a deterrent to particular marriages, at least it will prove useful in deciding whether to have or adopt children. When two carriers do mate, a medical warning can prepare them psychologically for the birth of an affected child.

Third, 'what to do?', or treatment. One form of treatment has been mentioned above, choosing not to have progeny. There are other forms of treatment available in some cases. For example, the phenylalamine-limited diet for PKU, or a galactose-limited diet for galactosemia. Similarly, the avoidance of anti-malarials, phenacetin, etc. prevents primaquine-sensitive hemolytic anemia and suxamethonium-induced apnea may be prevented by avoiding this drug. Removal of the spleen in hereditary spherocytosis and surgery for polyposis are also possible treatments.

Supplements, such as insulin, thyroid hormone, or pituitary hormone in hereditary hormonal deficiencies, are often employed. The rapidly approaching possibility of kidney transplantation in hereditary cystic disease is also a supplementation treatment. Our requirement for vitamins is an example of a supplementation for which we all have a genetic deficiency acquired long ago in evolution.

All of these are, however, treatments and not cures. Molecular geneticists have recently identified and characterized DNA (*d*eoxyribo*n*ucleic *a*cid), the hereditary substance or chemical of genes. We are just beginning to understand the mechanisms by which DNA replicates and acts to control metabolism. Perhaps, some day, tailor-made virus-like agents of DNA will be used to remove disease genes and replace them with normal genes. In that day we will have a true cure.

Acknowledgments: Dr. Victor McKusick kindly permitted both the reproduction of figures 4, 6, 8, 11, 12, 13 and 14, made available some of the material on which this article is based, and offered several useful suggestions. For this and his generous tutelage in the past year, I am most grateful. Dr. Catherine Lee made available figures 1, 2, 3, 5, and 9; and Dr. Peter Bowen, figure 7. Dr. Samuel H. Boyer, IV also offered useful suggestions, and permitted the reproduction of figure 10, which was prepared through his collaboration.

References: For further general reading—*Human Genetics* by V. A. McKusick, from The Foundations of Modern Genetics Series edited by S. R. Suskind and P. H. Hartman, Prentice-Hall, Englewood Cliffs, New Jersey (1964) is recommended. *The Journal of Chronic Diseases* annually carries an issue devoted to an annual review of medical genetics edited by V. A. McKusick. References to any of the topics covered here may be found in these sources.

TEACHING SEMINAR

University of Arkansas Medical Center
Little Rock, Arkansas



THE MANAGEMENT OF ANGINA PECTORIS*

Mc K. Eugene McNabb, M.D. and James E. Doherty, M.D.

The major manifestations of atherosclerotic coronary artery disease or arteriosclerotic heart disease include:

1. The anginal syndrome (angina pectoris). This is characteristically described as retrosternal or precordial discomfort or pain occurring with exertion, sometimes radiating to the arms or neck, relieved by rest and/or nitroglycerin. The electrocardiogram may be normal except during an episode of pain.

2. The intermediate syndrome (angina decubitus, status anginosus). Described as an "intermediate" state between angina pectoris and infarction. Pain occurs at rest, often of long duration and is inconsistently relieved by nitroglycerin; often requiring narcotics. The electrocardiogram does not show findings indicative of myocardial infarction, either transmural or nontransmural, but is often abnormal.

3. Myocardial infarction. The familiar "heart attack" characterized by severe, prolonged pain as described above, requiring narcotics for relief with electrocardiographic or other signs of tissue necrosis.

This discussion is concerned with the first of these symptoms, namely, angina pectoris, a troublesome manifestation of a serious disease.

General Measures

In approaching the management of patients with angina pectoris, ruling out those diseases which aggravate the condition should be automatic. Occasionally this will require more than the routine laboratory tests. Identification of a coexisting aggravating disease and its proper treatment may dispel the need for more than minimal treatment of the angina itself. Diseases known to increase anginal attacks include polycythemia, hypoglycemia, thyrotoxicosis, hypertension, cardiac arrhythmias, such as bigeminy or any type of tachycardia, anemia, and congestive heart failure. Some of these may insidiously affect the patient's course and should be searched for in individuals with changing complaints or "treatment failures". Any overt disease in some measure may add to the burden of the heart and merits attention. Several disorders are recognized as occasionally complicating angina pectoris, even if by an indirect route. Hiatal hernias, chronic gall bladder disease, peptic ulcers and musculoskeletal disturbances about the chest and arms, when corrected may considerably minimize what formerly seemed a real problem in cardiac therapy. The pressure pain of the overdistended urinary bladder should not be overlooked as an aggravating factor.

Much can be done for the angina patient besides the employment of drugs. Patients should be counseled against pain-precipitating, necessary bursts of physical activity and taught to stop short of actually experiencing angina. Stress should be made on the point that most things can be accomplished if performed slowly enough. A patient should be instructed to regulate each day's work load so that his accumulated fatigue does not result in anginal pain in the evening.

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Patients often superimpose an acute stress to the heart on a cumulative end-of-the-day fatigue (sexual intercourse is an example). A simple rearrangement of living habits can avoid jeopardizing the heart. Mild, regular exercise for the idle, sedentary patient is not contraindicated and may be beneficial. Some authors point to the effect of exercise in increasing coronary flow. For mild exercise this augmented flow is disproportionately greater than the myocardial work burden produced by the exercise. This can result in some degree of prophylaxis against angina.

Patients should be enlightened as to the effect of cold, in several different forms, on his condition. Even cold drinks or touching cold objects with the hands in addition to cold wind, cold baths, cold beds and bedrooms and general body chilling may trigger attacks. Wintertime may double the heart's difficulties in that the patient faces colder temperatures with the added weight of extra clothing. Some patients inadvertently perform errands in the colder early morning hours that could well be left to the middle of the day and done without pain. Retiring at night to an unheated bedroom, changing into cold pajamas, and assuming the recumbent position on cold sheets may initiate angina. Pre-warming the bedroom and the pajamas and sitting on the bed with a robe over the pajamas a few minutes before lying may enable the patient to avoid an attack. Electric blankets adjusted each night prior to entering the bed are helpful to some cardiac patients. Covering the mouth with a scarf while walking in the winter air may help prevent chest pain.

The idea that the individual can alleviate his heart burden and diminish the occurrence of pain by reducing excess body weight is a stronger stimulus than most incentives for weight reduction and should be exploited fully by the physician.

The act of eating and the process of digestion have certain hazards. Extra large meals should always be avoided because of the increased work load placed on the heart to step up blood flow to the gastrointestinal tract. Four small meals a day would be better than two or three in many patients. Armchair rest and relaxation for thirty minutes or more after each meal may make quite a difference in the course of some. Caution should be urged against physical exertion in the postprandial period.

The part emotions play in the production of chest pain impresses many patients more than that related to exertion. Some patients learn on their own a form of "walk away therapy" in which emotion-laden situations are spotted in advance and avoided by the patient. Athletic events notoriously precipitate angina. The weight of the physician's advice may need to be brought to bear on those patients who take increased risks to attend sports events. Television or radio may also be found to be quite stressful. There are individuals who know that certain weekly television shows can produce angina with "clock-like" regularity. Guarding against overindulgence in emotionally charged "entertainment" can smooth the course of the troubled angina patient.

The role of the patient's job in the aggravation of his disease should be of interest to the physician. Frequently he has to decide whether or not the burden on the patient's emotional and physical energies is too great. The factor of occupational stress may be seen in an illustration close to home. In a study conducted on heart disease in American physicians, the prevalence of coronary artery disease in four doctor groups ranked as follows:

General practitioners
Anesthesiologists
Pathologists
Dermatologists

General practitioners had a prevalence rate approaching two times that of non-medical population groups and three times that of dermatologists and pathologists. Anesthesiologists had a prevalence rate of two times that of the other two specialty groups mentioned. Hopefully, the working duties of the angina patient may be modified to allow pursuit of an occupation relatively free of the former pain-producing stresses.

The use of nicotine is not advised in any person with a circulatory disorder. One cigarette can provoke an anginal episode in susceptible individuals. The problem of smoking, however, cannot be dealt with too rigidly because most patients will be relatively less sensitive to circulatory ill effects of nicotine and may be compromised by the anxiety induced by withdrawal from smoking.

The discrete use of alcohol causes no harm to

one with ischemic heart pain. The effect is to relieve the pain and provide brief protection, partly through coronary vasodilatation, partly through sedation. Alcohol, however, is no substitute for nitroglycerin and its abuses and their consequences are well known.

The caffeine in coffee, by stimulating increased cardiac work, may induce angina in a few sensitive patients. The premature atrial or ventricular beats and occasional supraventricular tachycardias associated with coffee-drinking may also lead to angina.

Travel for these patients is not prohibited. Moving to a warmer climate in the colder parts of the winter would be to the advantage of the majority of patients. Air travel with modern, pressurized cabins is suitable provided the patient is not frightened by airplanes. Long automobile trips when the patient is at the wheel should be avoided.

A review of general and supportive measures pertaining to cases of angina pectoris makes it clear that there is a certain amount of tailoring to be done to get the most effective regimen for the individual patient. One technique to aid this is to have the patient keep a diary or log for a day, a week, or longer, recording in chronological order every activity of each 24 hour period. Notations should be made concerning the exact time of anginal pain and dose of nitroglycerin required to obtain relief. If this is carefully and comprehensively kept, one can go over the record step-by-step offering many pain-sparing suggestions to the patient. Long term habits may be aggravating his condition. Unless encouraged to make a thorough written inventory, it may never occur to the patient to discuss the matter with his doctor.

Tranquilizers, such as meprobamate, and sedatives, such as phenobarbital, have a place in the management of his disorder. Their major use should be in those prone to chronic anxiety as distinguished from the expected anxiety associated with the potentially fatal arteriosclerotic heart disease. It is probably an injustice to place all patients with angina on cerebral depressants, particularly if the benefits of thorough counseling and general measures have not been exhausted.

Specific Drugs

The main pharmacologic agent available for defense against the anginal pains is nitroglycerin taken by the sublingual route. Whether the drug relieves pain by increasing coronary blood flow or by temporarily decreasing myocardial work is not completely clear. Relief may be obtained within one minute. Nitroglycerin is the most practical, rapid acting antianginal compound. Duration of nitroglycerin action is twenty minutes. Side effects consist of a general sensation of warmth, flushing of the face, and headache. Rarely transient dizziness or faintness may occur in sensitive individuals because of the generalized vascular dilatation produced by the drug. Serious toxic reactions are unknown. Amyl nitrite by inhalation is slightly faster but is awkward because of glass ampules which must be broken for use.

Despite the relative directness and simplicity of this therapeutic measure against the individual anginal attack, one who regularly sees cardiac patients is impressed with the number of people who do not use this medicine effectively. The nitroglycerin headache is of considerable importance to some patients and is the price some pay for relief of chest pain.

Nitroglycerin is available in tablets of 1/400, 1/200, 1/150 and 1/100 grain. A frequent practice is to place all angina patients on 1/150 grain tablets without inquiring to discover if they suffer through an attack rather than experience the inevitable headache. Some can enjoy relief of pain while remaining relatively free of unpleasant side effects on adjustment of the dose of nitroglycerin. Others may have the intensity of the headache decreased. Salicylates may be employed to some advantage in these. Some patients do not know that it is advisable to take nitroglycerin prophylactically, even though they have long known what would induce a pain and when it would occur. It is often a simple matter for a physician to interview a subject and pinpoint the events which precipitate angina in the patient's daily life. He should be encouraged to fortify himself with nitroglycerin before performing pain-producing acts. Some cardiologists have used a regular hourly or two-hourly schedule of doses during waking hours. The strength of nitroglycerin will deteriorate over a period of months; this should be remembered when patients appear to have lost their responsiveness. A new prescription should be written and the patient instructed to insure that tablets are kept in a dry, dark, and

preferably, cool environment. A new supply should be dispensed every 3 months.

Questioning patients as to (1) whether or not they carry nitroglycerin with them when away from home; (2) how many tablets they average per day, and (3) why they fail to take the medicine one can spot peculiar attitudes or inhibitions against the use of the drug. For example, a public official in a small community avoided using nitroglycerin during his working day because he feared townspeople would believe he used narcotics or nerve pills. Another patient was reluctant to use nitroglycerin at home when his wife was there because she always became upset and worried about his condition when she saw him taking the tablets. Occasionally patients can be found to be using the drug sparingly because they fear they might develop tolerance to the point of unresponsiveness. A rare patient will say he doesn't want to "get dependent on them". Concern over possible ill effects from the drug is harbored by some patients, particularly those impressed by the associated headache. Proper education of these persons, and their spouses in some instances, can provide a more comfortable life for them.

The twenty minute duration of action of nitroglycerin (sublingual) impairs its usefulness in a role of providing sustained protection against pains. However, several long-term antianginal drugs are in use. Pentaerythritol tetranitrate, an oral preparation, among these has had the widest usage. The most common pharmacologic explanation of its action is coronary vasodilatation with increased available blood nutrients for potentially ischemic areas of the myocardium. Double blind investigations in which the drug was compared to a placebo as to the effectiveness in decreasing the frequency of anginal pains in susceptible patients have shown that in the greater percentage pentaerythritol tetranitrate was no better than the placebo. In a different type of test of efficacy the capacity of the agent to prevent ST and T electrocardiographic changes during exercise tests fell clearly below that of sublingual nitroglycerin. It should be observed that the results of the many studies done on the usefulness of this agent are far from uniform. It follows that a patient posing a management problem should be given a trial to see if he is among that minority of patients who do respond to long term antianginal drugs.

The merits of isosorbide dinitrate have not drawn attention until recent years. This drug may be used sublingually or orally with good absorption. By the sublingual route its onset of action is comparable to that of nitroglycerin, but somewhat slower, although its duration may be longer. Several controlled double-blind studies show the oral preparation has performed better than a placebo and pentaerythritol tetranitrate. A final opinion of its effectiveness awaits further observations.

Nitroglycerin ointment (nitrol ointment^{R}) containing 2% nitroglycerin in lanolin and white petrolatum base, sold in tube form has been recommended by a few authors. An initial dose of one-half inch is extruded and applied to the skin surface (one inch contains fifteen mg. nitroglycerin). Absorption from the skin is sufficient for protection against pain but slow enough to have a sustained effect. The act of self- application of the medication to the precordium seems to have an added psychologic benefit in certain patients. The active business executive might find the preparation inconvenient to use during the day, but the problem patients with nocturnal angina or with semi-invalidism due to angina can derive the desired relief. Data based on controlled double-blind investigations have not been documented.

As a general precaution sudden withdrawal of nitroglycerin ointment and others of the long term antianginal group may in some individuals result in a period of increased angina. These latter drugs are merely supplements in the treatment of angina. Nitroglycerin tablets should be kept available as they are the keystone of anginal therapy.

Dipyridamole (Persantin^{R}) a drug with a myocardial metabolic effect plus the property of increasing coronary flow has been disappointing when studied by a double-blind technic.

Table I outlines dosage, indications and duration of action of some of the drugs commonly employed for treatment of angina pectoris.

The measures discussed above aim at relieving the cardinal subjective feature of a form of heart disease. The physician must also concern himself with that which can be done to counter the arteriosclerotic disease process itself and to ward off myocardial infarction, if possible. The topic of cholesterol-lowering agents, estrogens, unsatu-

rated fat-augmented diets, long-term anticoagulation, etc. is beyond the intent and scope of this discussion and will not be explored further.

Other Forms of Therapy

The utilization of antithyroid medication, specifically, radioactive iodine has been shown to reduce the number and severity of anginal episodes. It is necessary to render the patient myxedematous in order to achieve this effect, however, and the management of the patients' hypothyroidism is often a more difficult disease to control than the original uncomplicated disorder. This form of therapy should be undertaken only by one with experience in this field.

The surgical approach to coronary artery disease deserves some comment. Suffice to say that the procedures thus far proposed and evaluated, do not alter the basic pathology of the disease; though they may provide some rather temporary and questionable benefit. There appears to be

TABLE I. PHARMACOLOGIC AGENTS FOR THE TREATMENT OF ANGINA PECTORIS

PREPARATION	ROUTE OF ADMINISTRATION	DOSE	ONSET	DURATION	INDICATION
Amyl nitrate	Inhalation	0.2 cc PRN	10-15 seconds	5-7 minutes	Immediate pain relief
Nitroglycerin	Sublingual	1/400-1/100 grain PRN	1-2 minutes	10-30 minutes	Immediate pain relief, prophylaxis
Nitroglycerin Ointment (Nitrol Ointment[R])	Topical	½ inch PRN	3-20 minutes	2-4 hours	Prophylaxis
Isosorbide dinitrate (Isordil[R])	Sublingual	5-10 mg. PRN	2 minutes	2-3 hours	Immediate pain relief and Prophylaxis
———	Oral	5-20 mg. QID	20 minutes	4-6 hours	Prophylaxis
Erythrityl Tetranitrate (Cardilate[R])	Sublingual	7.5-30 mg. PRN	5 minutes	1-2 hours	Prophylaxis
———	Oral	30 mg. QID	15-20 minutes	3-4 hours	Prophylaxis
Mannitol Hexahitrate	Oral	15-60 mg. QID	15-20 minutes	3-4 hours	Prophylaxis
Pentaerythritol Tetranitrate (Peritrate[R])	Oral	10-20 mg. QID	60-90 minutes	5-6 hours	Prophylaxis
Ethanol as Whiskey	Oral	1-2 ounces PRN	5 minutes	Approximately 3 hours	Immediate pain relief and prophylaxis
Morphine Sulfate	Intravenous, intramuscular, subcutaneously or orally.	⅛-¼ grain PRN	5-20 minutes	2-3 hours	No response to nitroglycerin, suspected infarction
Meprobamate	Oral	400 mg. QID	30 minutes	4-6 hours	Reduce the factor of anxiety

no really satisfactory surgical procedure that may be offered the coronary patient.

Summary

The medical management of angina pectoris, a manifestation of atherosclerotic coronary artery disease, has been discussed. The proper appraisal of concomitant diseases; the importance of their correction; the approach to induced stress, emotional or otherwise; and therapeutic measures available have been stressed.

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Necrobiosis Lipoidica Diabeticorum

M. Bauer et at (1200 N State St, Los Angeles), *Arch Derm* 90:558 (Dec) 1964

Sections of skin stained with hematoxylin and eosin, periodic acid-Schiff, and the colloidal iron stain of Rinehart and Abul-Haj were compared with sections of normal skin similarly stained. Vessel changes compatible with those said to be characteristic of diabetic microangiopathies were demonstrated in necrobiosis lipoidica diabeticorum. Because of certain histochemical changes, the supposition was advanced that a glycoprotein was deposited in the vessel walls and between the collagen bundles of the dermis in necrobiosis lipoidica diabeticorum. It was not possible to subdivide this group into those with hyperglycemia and those without hyperglycemia on a basis of their histopathological or histochemical changes. With the advent of the kidney biopsy, diagnoses of diabetic nephropathy were made in the absence of a manifest abnormal carbohydrate metabolism. In conclusion, it should be just as feasible to make a diagnosis of necrobiosis lipoidica diabeticorum in the absence of abnormal glucose tolerance, if the proper linical, histopathological, and histochemical changes are present. Necrobiosis lipoidica diabeticorum is categorized as a cutaneous manifestation of diabetic mecroangiopathy which may precede abnormal carbohydrate metabolism.



WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

ANSWER ON PAGE 375



No. 17-82-75 3-month-old female

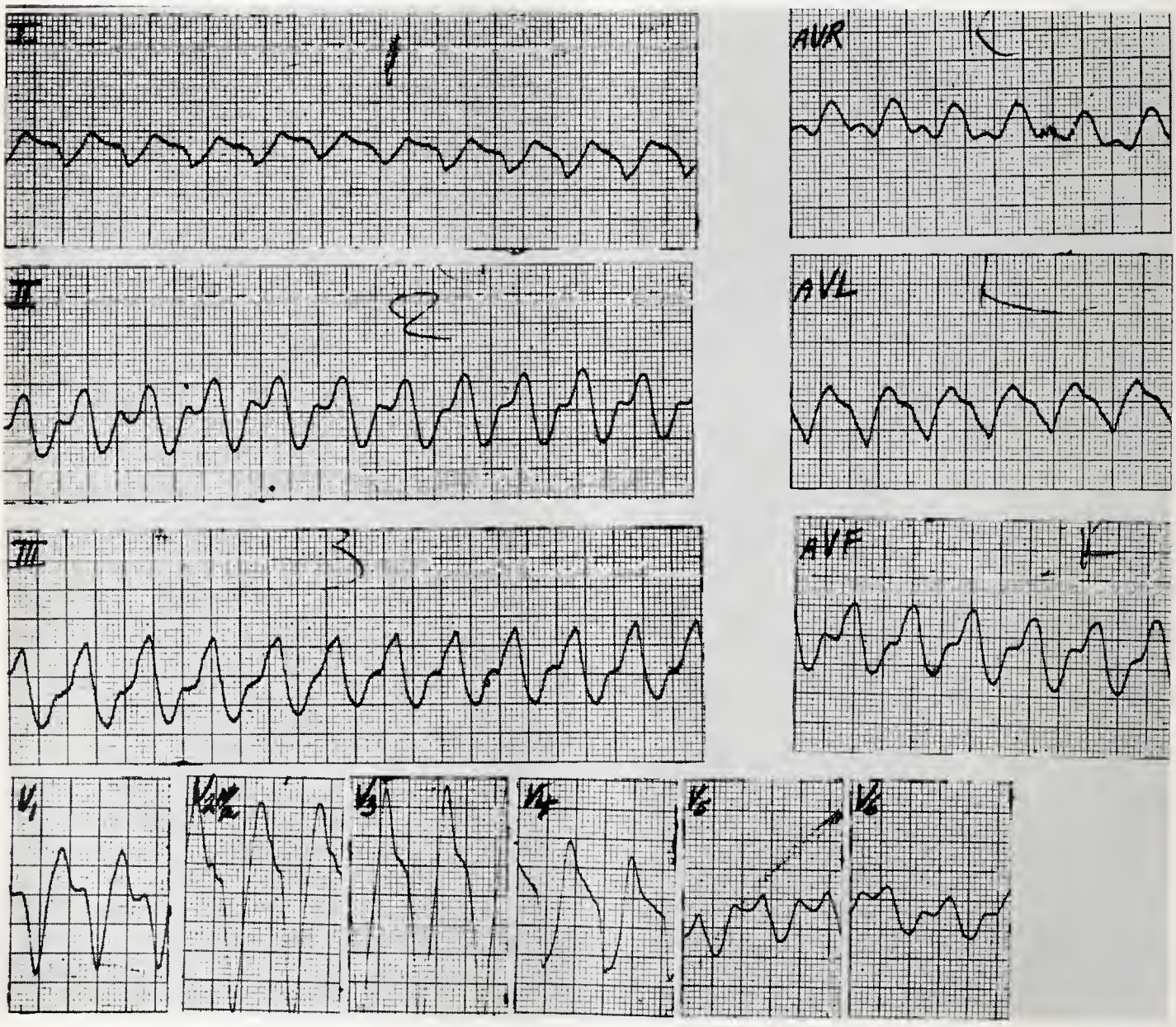
HISTORY: Three days prior to admission the parents noted swelling of the right shoulder. She was noted to splint the right arm and cried when this extremity was moved.

ELECTROCARDIOGRAM OF THE MONTH

WHAT IS YOUR INTERPRETATION?

AGE: 60 SEX: M BUILD: Slender BLOOD PRESSURE: 90/60
CARDIAC DIAGNOSIS: Infarction (?)
OTHER DIAGNOSES: History of Ca. of stomach with metastasis to liver
Medication: Not known
HISTORY: Patient arrived in emergency room in terminal condition.

ANSWER ON PAGE 375



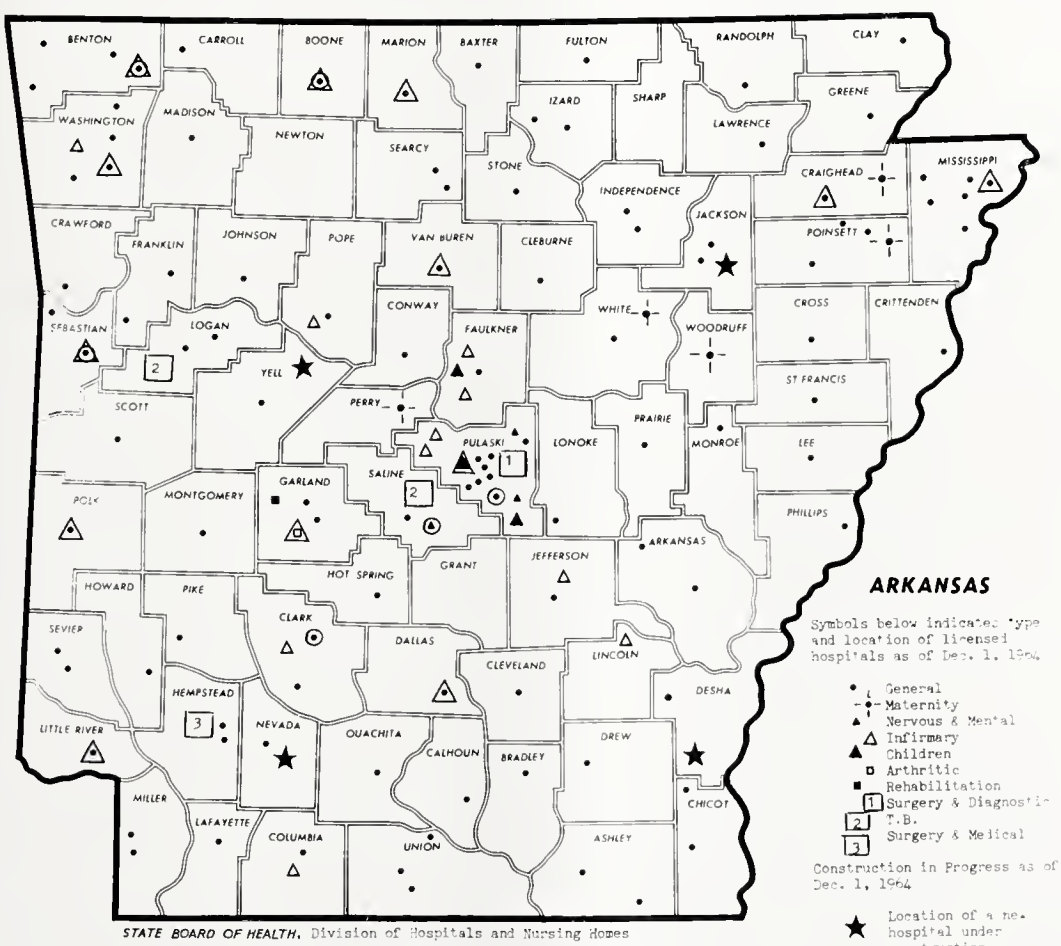
The Department of Medicine, University of Arkansas Medical Center
James S. Taylor, M.D., Professor of Medicine

HOSPITALS IN ARKANSAS

PUBLIC LAW 725 OF THE 79TH Congress was entitled the "Hospital Survey and Construction Act" and commonly known as the "Hill-Burton" Act. It was passed for the purposes of assisting the several states in inventorying their existing hospitals and encouraging local sponsors to construct public and other non-profit hospitals and medical facilities by providing federal assistance under the Program to help pay the costs of constructing and equipping these new facilities.

The Hill-Burton Act was extended in the last Congress and it is now known as the Hill-Harris Act since this extension was sponsored in the House of Representatives by Congressman Oren Harris of Arkansas.

The Arkansas Legislature by Act 85 of 1947 established the Division of Hospitals in the State Health Department for the purpose of administering the requirements of Public Law 725 of the 79th Congress. This Act also required the Board of Health to license all medical facilities where two or more non-related persons are housed for a



period of twenty-four hours or more and to promulgate rules and regulations for all licensed medical facilities.

Act 85 of 1947 was amended by Act 111 of 1953 and Act 363 of 1955. The present state enabling legislation is Act 414 of 1961. Both of the aforementioned amendments were basically for broadening the Nursing Home Portion of this Program. Act 414 of 1961 made several changes in the enabling legislation including the establishment of a separate Advisory Council for Nursing Homes.

Eighty-four of the original hospitals in operation in 1947 have closed because of new construction by both private and Hill-Burton funds since then. In 1947 the State had a total of 4,356 general and maternity hospital beds. As of December 1, 1964 it has 7,312 general and maternity hospital beds.

As previously stated the Hill-Burton program provides a percentage grant for non-profit and publically owned and operated institutions only, and the present percentage grant for the various type facilities is as follows:

1. General Hospitals 50%
2. Public Health Centers 50%
3. Chronic Disease Facilities 66⅔%
4. Rehabilitation Facilities 66⅔%
5. Diagnostic and Treatment Centers 66⅔%

On April 9, 1964 the total cost of all medical facilities constructed under the Hill-Burton Program in Arkansas was $89,185,420.56. Federal funds provided $47,218,774.86 of this total.

At the present time, construction is in progress to provide an additional 509 hospital beds in the State.

The Arkansas map with this article shows the location and type by counties of the licensed hospitals as of December 1, 1964. The total hospital beds for the State in all types of hospitals (not including nursing homes) is 13,761.

A TSH Reserve Test for Detection of Mild Secondary Hypothyroidism

H. Studer, F. Wyss (Department of Medicine, Anna Seiler Haus, Inselspital, Berne, Switzerland), and H. W. J., *J Clin Endocr* 24:965-975 (Oct) 1964

A test for assessing thyrotropin (TSH) reserve is described. The procedure is based on the fact that TSH secretion increases if the thyroid hormone synthesis is blocked by carbimazole. The use of a TSH reserve test is suggested as an additional index for investigating the thyroid function in patients with signs and symptoms of mild hypothyroidism but with a normal protein-bound iodine (PBI) and a normal radioactive iodine 131 uptake. The results of investigations in 14 such patients (three of them with pituitary tumors and two with partial hypophysectomy) are presented. Finally, a limited TSH reserve may prevent thyroxine production from keeping up with thyroxine utilization unless a new steady state at a slightly hypothyroid level, in which thyrozine utilization is slowed down, is achieved.

An Autopsy Study of Leukemia in Hiroshima

R. E. Anderson et al (University of New Mexico Medical School, Albuquerque), *Arch Path* 78:618 (Dec) 1964

During 1949 to 1962, 157 cases of leukemia were autopsied by the Atomic Bomb Casualty Commission in Hiroshima. The epidemiological characteristics are discussed. A comparison between proximally and distally exposed cases of leukemia showed differences in the spleen sixe and clinical survival myelogenous leukemia; these differences were the most marked in the chronic form. In addition, diffuse bone marrow fibrosis was increased in proximally exposed cases of chronic myelogenous leukemia and, when compared to leukemic individuals without this finding, it was associated with a longer clinical course. The possible interpretations of these findings are discussed and related to other evidence suggestive of basic differences between radiation-induced leukemia and the spontaneous variety. No other morphological differences between proximally and distally exposed or nonexposed cases were found, and it was not possible to identify an individual case as radiation-induced.



EDITORIAL

POTASSIUM DEFICIENCY AND CHRONIC PYELONEPHRITIS

Alfred Kahn, Jr., M.D.

Renal pathology is interesting and complicated. Prior to the 1930s the lesions of chronic pyelonephritis were considered uncommon. A classic research project by Soma Weiss and Frederick Parker, Jr. proved from collected autopsy material that chronic pyelonephritis was not a rare disease. In the course of their study, they found certain pathological characteristics of chronic pyelonephritis which, when applied as criterion to old autopsy material, indicated many misdiagnoses in the past. The results showed that the autopsy diagnosis of chronic pyelonephritis had been too low. This study has been considered a medical classic.

Recently, Muehrcke and McMillan (Annals of Internal Medicine Vol. 59, p. 427, October, 1963) have published an interesting paper in which they state that chronic potassium deficiency may simulate the lesions of chronic pyelonephritis. These authors had the advantage of a technical advance not available at the time of Weiss and Parker's work, namely, needle biopsy of the kidney. They studied 15 patients with chronic potassium depletion by renal biopsy technique and found morphological lesions of chronic pyelonephritis. Experiments were also performed on potassium depleted rats. They found two morphological lesions; hydropic degeneration of the tubules which was said to be reversible and in cases of prolonged deficiency institial fibrosis and destruction appeared; there was a definite predilection for infection to develop in the kidneys of these patients with chronic potassium deficiency states.

Fifteen patients were studied with renal biopsies. In this group, the potassium level was below 2.8 ME/L. Proteinuria was present in all patients and leukocytes were present in large numbers in the urine of twelve. The biopsies were both surgical and percutaneous; they showed definite evidences of chronic pyelonephritis in nine patients. Interstitial fibrosis was the main abnormality in five patients. Hydropic degeneration was seen in one patient. The tubular epithelium was flattened and the tubules were dilated in all except one patient. Renal artery sclerosis was present in eight specimens.

Potassium deficient rats were studied. The first lesions occurred 18 days after onset of the experiment, and the lesions appeared in the region of the collecting tubules; the lesions consisted of swollen mitochondria. Soon extra cells appeared between the tubular epithelial cells, and this led to some tubular obstruction. There was some interstitial edema; these abnormalities were reversible. Longer potassium deficiencies produce interstitial fibrosis. Kidneys such as the latter enhanced susceptibility to infection.

The patients studied here usually became potassium deficient because of chronic diarrhoea or undetected loss of potassium through the kidneys. The authors further report that not alone are potassium deficient kidneys more susceptible to bacterial invasion, but these subjects were more susceptible to the endotoxin of gram negative bacteria. Apparently the lesions of potassium deficiency act as a point of lowered resistance so that bacteria can invade the injured areas.

In summary, the lesions of potassium deficiency may mimic renal infection, and frequently they act as a portal for superimposed renal infection.

PROGRAM

EIGHTY-NINTH ANNUAL SESSION

ARKANSAS MEDICAL SOCIETY

MARION HOTEL AND ROBINSON AUDITORIUM

LITTLE ROCK, ARKANSAS

APRIL 25-28, 1965

SCIENTIFIC SESSIONS

Sunday, April 25th

The Arkansas Dermatological Society will have a presentation of clinical cases at the University Medical Center out-patient building beginning at 9:00 a.m.; discussion at the Student Union Building at 10:30 a.m.; luncheon at 12:45 p.m. at the Coachman's Inn. Dr. Harold O. Perry of the Mayo Clinic will be guest dermatologist.

Monday, April 26th

The first scientific session will open at 8:00 a.m. on Monday, April 26th, with the showing of films in the Lecture Hall of the Robinson Auditorium. Dr. Thomas E. Burrow of Hot Springs, First Vice President of the Society, will preside. The program is as follows:

8:00 a.m. Scientific Films:
"Recurrence in Inguinal Hernia" (21 minutes)
"Resuscitation of the Newborn" (25 minutes)

9:00 a.m. Symposium on Current Concepts of Diagnosis and Management of Vascular Disease

"Vascular Clues in Diagnosis"—Dr. John A. Spittell, Jr., Consultant in Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

"What's New in Coronary Artery Disease?"—Dr. Robert O. Brandenburg, Consultant in Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

Intermission

"Radiologic Contrast Studies in Vascular Disease"—Dr. Hillier L. Baker, Jr., Consultant in Radiology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

Panel Discussion with Questions from Audience
Moderator: Dr. J. P. Whisnant
Panel: Drs. Spittell, Brandenburg, and Baker

PRESIDENT'S ADDRESS

Monday, April 26th

11:45 a.m. Dr. C. R. Ellis of Malvern, president of the Arkansas Medical Society, will address the membership. Lecture Hall, Robinson Auditorium.

SCIENTIFIC SESSIONS

Monday, April 26th

2:00 p.m. Symposium on Current Concepts of Diagnosis and Management of Vascular Disease, continued. Lecture Hall, Robinson Auditorium. Dr. Charles A. Taylor of Batesville, Second Vice President of the Society, will preside.

"Medical Treatment of Hypertension—1965," Dr. Philip J. Osmundson, Consultant in Medicine, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

"Selection of Stroke Patients for Definitive Treatment"—Dr. Jack P. Whisnant, Consultant in Neurology, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

Intermission

"Reconstructive and Revascularization Procedures in Arterial Surgery"—Dr. Robert B. Wallace, Consultant in Surgery, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

Panel Discussion with Questions from Audience

Moderator: Dr. J. A. Spittell

Panel: Drs. Osmundson, Whisnant, and Wallace

Tuesday, April 27th

The scientific session on Tuesday will open at 8:00 a.m. in the Lecture Hall of the Robinson Auditorium with the showing of scientific films. Dr. Omer Bradsher of Paragould, third vice president of the Society, will preside. The program is as follows:

8:00 a.m. Scientific Films

"Tracheotomy and Cricothyrotomy" (23 minutes)

"Thumb Reconstruction by Toe Transfer" (15 minutes)

9:00 a.m. "Amenorrhea", Dr. Howard W. Jones, Jr., Johns Hopkins Hospital, Baltimore, Md.

[9:00 a.m. The Eye, Ear, Nose and Throat Section will meet in the Court Room of the Marion Hotel. Speakers include: Dr. Henry Allen of Boston and Dr. Moriss Henry of Fayetteville]

9:50 a.m. "Selection of the Deaf Who Can Be Helped Surgically," F. R. Guilford, Professor of Otolaryngology, Baylor University School of Medicine, Houston, Texas

10:30 a.m. Intermission

11:00 a.m. "Use of Drugs in Pediatrics"—Dr. Harry C. Shirkey, Director, Children's Hospital, Birmingham, Alabama

[The Joint Society-Auxiliary Memorial Service will be held in the Lecture Hall of the Robinson Auditorium at 11:45 a.m. on Tuesday the 27th]

PANEL LUNCHEONS

Tuesday, April 27th

12:30-2:15 p.m.

No. 1. "Family Planning"

Obstetrics-Gynecology, Urology, and Psychiatry Sections
Dr. Howard Jones; Dr. William Valk.
Forum Room, Marion Hotel

No. 2. "Low Back Pathology"

Orthopedics, Radiology, and Neurology Sections
Dr. Robert H. Ramsey, Dearborn, Mich.; Dr. Hillier Baker; Dr. Jack Whisnant

Banquet Hall, Marion Hotel

No. 3. "Office and Clinical Use of Drugs by the Internist, Pediatrician and Surgeon"

Internal Medicine, Pediatrics, and Surgery Sections
Dr. Harry Shirkey; Dr. Robert Brandenburg; Dr. Robert Wallace

Continental Room, Marion Hotel

SECTION MEETINGS

Tuesday, April 27th

2:30 p.m. No scientific sessions are scheduled after the panel luncheons programs on Tuesday afternoon to allow time for the individual sections to have separate business meetings.

SCIENTIFIC EXHIBITS

The scientific exhibits will be located in the Exhibit Hall of the Robinson Auditorium with the Technical Exhibits. All members are urged to visit the exhibits as they are an integral part of the program. The following will have scientific exhibits:

Drs. Wilson and Wilson, Fort Smith
Dr. Kenneth R. Duzan, El Dorado
Dr. Clark Gillespie, Little Rock
Dr. George W. Jackson, Arkansas State Hospital, Little Rock
Dr. William B. Stanton, Fort Smith
Dr. Joe B. Scruggs, Arkansas Baptist Hospital, Little Rock
Dr. Thomas M. Durham, Hot Springs
Dr. Morriss M. Henry, Fayetteville
Dr. Ralph Downs, Fort Smith
Dr. J. A. Harrell, Jr., Little Rock
Dr. Carl Williams, Fort Smith
Dr. Howard M. Barnhard, University of Arkansas Medical Center, Little Rock
Drs. Jones and Murphy, Little Rock
Dr. John Warren Murry, Fayetteville
Dr. Melvin R. McCaskill, Little Rock
Dr. Calvin J. Dillaha, Little Rock
Dr. H. A. Ted Bailey, Little Rock
Dr. J. Harry Hayes, Little Rock
Dr. G. Allen Robinson, Harrison
Dr. Frank G. Lockwood, Fort Smith
Dr. Kenneth Jones, Little Rock
Dr. Glenn Horton, Memphis
March of Dimes
National Foundation
Arthritis Foundation
Tuberculosis Association
Dr. James Doherty, Veterans Administration, Little Rock

Doctors' Art Exhibit

A section of the technical exhibit area has been set aside for a display of paintings by members of the Society. Physician-artists are urged to contact Dr. J. Harry Hayes, Jr., Donaghey Building, Little Rock, regarding this exhibit.

Technical Exhibits

The business firms who purchase exhibit space at our Annual Session contribute a great deal to the financing, as well as to the educational aspects, of the meeting. The number of visits to the technical exhibits is the only criteria by which these companies can judge the value they receive from the investment in booth rental, displays, and employees' time. You will be rewarded for the time you spend visiting the exhibits.

Following are descriptions of displays to be featured.

PARKE, DAVIS & COMPANY

Medical service members of our staff will be in attendance at our booth to discuss important Parke-Davis specialties which will be on display.

WM. P. POYTHRESS & COMPANY

Mudrane, established Poythress combination for relief of bronchial asthma, and its new companion products, Mudrane GG and Mudrane GG Elixir, will be featured at the Poythress exhibit booth. Solfoton, Solf-Serpine, Trocinate, Panalgesic and Synirin will also be featured. Your requests for descriptive literature, reprints, and professional trial quantities of Poythress products are cordially invited.

WM. T. STOVER COMPANY, INC.

The Wm. T. Stover Company, Inc., Little Rock, Arkansas, enjoying its 25th year of service to the medical profession, will occupy booths 5 and 6, which will be staffed by informed and qualified representatives—eager to welcome you and assist in any manner possible—as well as to show you the up-to-date developments in the medical and surgical industry.

DABBS SULLIVAN COMPANY

Mr. Melvin Spear, Account Executive with Dabbs Sullivan Company, Inc., will exhibit pamphlets and brochures regarding investment securities. Included in this exhibit are Mutual Fund prospectus and associated literature. Mr. Spear is available to answer any of your questions.

G. D. SEARLE & COMPANY

You are cordially invited to visit the Searle Booth where our representatives will be happy to answer any questions regarding Searle Products of Research. Featured will be Enovid for ovulation control and pregnancy and menstrual disturbances and Flagyl, a potent, new trichomonacidal agent for trichomonal vaginitis, cerviticis, urethritis, and prostatitis.

SANDOZ PHARMACEUTICALS

Sandoz Pharmaceuticals cordially invites you to visit our display at booth No. 13, where we are featuring Mellaril, Sansert, Cafergot P-B, Fiorinal and Fiorinal with codeine. Any of our representatives in attendance will gladly answer questions about these and other Sandoz products.

EXERCYCLE OF ARKANSAS

Exercycle is the world's leading exerciser, motorized to provide a rhythmic movement pattern. By varying the amount of effort applied by the subject it is possible to meet the entire range of physical fitness needs. A highly accurate solid state ergometric computor has been developed for laboratory work.

MARION LABORATORIES

PAVABID is a unique continuous release Plateau Capsule of papaverine hydrochloride providing vascular relaxant activity for 24 hours with a convenient b.i.d. dosage. PAVABID may be utilized effectively for the relief of cerebral and peripheral ischemia associated with vascular spasms, arrhythmias, and myocardial ischemia complicated by arrhythmias.

CIBA PHARMACEUTICAL COMPANY

Ciba's exhibit will feature Esidrix (R) hydrochlorothiazide. CIBA representatives will discuss the benefits of this product in hypertension (alone and as a concomitant therapy) and in various edematous states (congestive heart failure, toxemia of pregnancy, premenstrual edema, edema of pregnancy, steroid-induced edema, edema of obesity, nephrosis).

ABBOTT LABORATORIES

Abbott Laboratories invites you to visit our exhibit. Our representatives will be happy to answer any questions you may have concerning our leading products and new developments.

ENCYCLOPAEDIA BRITANNICA

Encyclopaedia Britannica welcomes delegates to the 89th Annual Session of the Arkansas Medical Society and invites them to examine the great new edition of Britannica. Official delegates may now purchase this magnificent set at an offer only available at our convention exhibits. Visit Britannica's Booth for free descriptive literature.

A. H. ROBINS COMPANY, INC.

Welcome to the convention, Doctor, from the A. H. Robins Company. He hope you can stop at our display for a moment. The representatives there will be happy to answer any questions you may have about our products and explain their advantages.

PFIZER LABORATORIES

Professional Service Representatives from Pfizer Laboratories will be pleased to have you in attendance at their booth to discuss the latest products of Pfizer research.

WARNER-CHILCOTT LABORATORIES

Warner-Chilcott's exhibit will feature GELUSIL (R) and PERITRATE (R). Our representatives in attendance will gladly answer questions about these and other Warner-Chilcott products.

HERBERT COX CORRECT SHOES

The major effort of Herbert Cox Shoes, Inc., of Little Rock and Pine Bluff, has been concerned for many years with the maintenance of outstanding facilities and standards for the use of footwear in the wide range of medical application: from orthopedic, general surgery, and pediatrics to rheumatology and obstetrics. The exhibit of Herbert Cox Shoes will cover these contingencies and will be attended by a senior staff member.

ARKANSAS BLUE CROSS-BLUE SHIELD

Our booth is for your convenience and we welcome your visit. Blue Cross-Blue Shield representatives are always ready to help solve any case problem or answer your questions. Our Association with the medical profession has been largely responsible for our growth in membership which now totals over 300,000—an achievement of which we should all be proud.

RATHER, BEYER & HARPER

Rather, Beyer, and Harper are administrators of group plans of disability and professional overhead expense insurance which have been officially endorsed by the State Society. A member of the agency will be present with brochures concerning the insurance plans and will have data on those people presently insured available for reference. He will be happy to discuss the programs with anyone who is not insured or to discuss any insurance problem that a member may have.

THE STUART COMPANY

A cordial invitation is extended to all members and guests attending the meeting to visit the Stuart Company booth. Specially trained representatives will be in attendance to answer your questions on new products, developed in our modern laboratories, which have particular interest for the medical profession. Products featured are DIALOSE, DIALOSE PLUS, MYLANTA, MYLICON, STUART PRENATAL, STUART PRENATAL-F, MULVIDREN-F, and MULVIDREN JUNIOR.

ARKANSAS X-RAY AND SURGICAL, INC.

Our display will feature The All New Ritter "45" Table which now joins the famous "75" to save effort and fatigue. Now two power tables in two price ranges to meet the needs of the profession. Choice of six upholstery colors. The table itself, designed in two-tone grey with chrome trim, will harmonize with any office decor—the colorful upholstery complimenting any wall or drapery accents. Ritter's newest powered table offers you the convenience and dependability of power elevation at a conservative price. Comfortable top in one piece. Built in retractable arm board, quality stirrups, utility drawer, drain pan, etc. Foot controls raise and lower the table. A new pamphlet "How New Tax Aids Favor Buying Medical Equipment on the Installment Plan" is available on request.

THE COCA-COLA COMPANY

Ice-Cold Coca-Cola served through the courtesy and cooperation of the Coca-Cola Bottling Company of Arkansas, and The Coca-Cola Company.

JULIUS SCHMID, INC.

An interesting and informative exhibit featuring IMMOLIN Vaginal Cream-Jel for use without a diaphragm, RAMSES Flexible Cushioned and BENDEX Diaphragms; RAMSES Vaginal Jelly; VAGISEC liquid and VAGISEC PLUS Jelly and Suppositories for vaginal trichomoniasis therapy; CANDEPTION (candicidin) Vaginal Ointment and Tablets for vaginal moniliasis; and XXXX (FOUREX) Skin Condoms, RAMSES, SHEIK and SHEIK LUBRICATED Rubber Condoms for the prevention of trichomonal and moniliam vaginal re-infection.

SCHERING CORPORATION

Schering cordially invites you to visit their exhibit where the latest information on new products may be obtained.

ELI LILLY & COMPANY

You are cordially invited to visit the Lilly exhibit. Our sales representatives in attendance welcome your questions about Lilly products and offer you precise information on recent therapeutic developments of Lilly research.

MERCK, SHARP & DOHME

The theme of the Merck, Sharp and Dohme exhibit is "Service to Medicine". One phase features the details of the Merck, Sharp & Dohme Postgraduate Program. Another feature includes information on teaching films for use by the profession and, also, lay films that can be utilized to portray the story of medicine to the lay public. The exhibit is concluded with a display of finger-tip files on selected Merck, Sharp & Dohme products.

E. R. SQUIBB & SONS

E. R. Squibb & Sons has long been a leader in development of new therapeutic agents for prevention and treatment of disease. The results of our diligent research are available to the Medical Profession in new products or improvements in products already marketed. At our booth, we will be pleased to present up-to-date information on these advances for your consideration.

THE UPJOHN COMPANY

GEIGY PHARMACEUTICALS

Geigy cordially invites members and guest of the Society to visit its exhibit. The exhibit features important new therapeutic developments in the management of cardiovascular disease as well as current concepts in the control of inflammation; hypertension and edema; depression; obesity; and other disorders, which may be discussed with representatives in attendance.

WALLACE LABORATORIES

We invite you to visit our booth where our representatives in attendance will be pleased to furnish information regarding Wallace products and your related medical questions to assist you in your practice.

SMITH, MILLER & PATCH

Our display will feature: LIPOTRIAD, a potent combination of lipotropes and oxtyropic B-complex factors in liquid or capsules. LIPOTRIAD is a means of controlled therapeutic nutrition for maintaining vitality and as a protection against degenerative processes.

VITRON-C, a most effective oral hematinic. VITRON-C, a combination of ferrous fumarate and ascorbic acid, has been clinically proven to be tolerated by patients with gastro-intestinal irritability or ulcerative disease. High toleration plus effectiveness makes VITRO-C the choice in treat-

ing iron deficiency anemias. VASOCIDIN a new topical ophthalmic solution for the treatment of ocular infections, conjunctivitis and blepharitis. An antimicrobial combined with a steroid and decongestant, VASOCIDIN contains SMP-68, a unique vehicle that enhances dispersion and penetration of the active ingredients. LIPOFLAVONOID —a new nutritional approach to certain types of neurosensory nerve deafness and vertigo usually associated with Meriere's disease.

HEWLETT-PACKARD

Hewlett-Packard will exhibit in Booth No. 25 electronic instruments from several of their manufacturing divisions including Sanborn, Berkeley Medical Instruments and Mechrolab. Field representatives will be on hand to discuss your requirements for ECG instrumentation, record-systems, intensive care units, blood analyzing instruments, Prothrombin Timers and other electronic instruments for diagnostic, clinical and research applications.

PROFESSIONAL PURCHASING ASSOCIATION

BRISTOL LABORATORIES

HEWLETT-PACKARD COMPANY

CONTOUR CHAIRS OF MEMPHIS

Free Coffee Bar

The Arkansas State Medical Assistants Society will have a "free coffee bar" in the center of the exhibit hall. The report of the advisory committee to this group (published elsewhere in this journal) gives information on the purposes and activities of the Medical Assistants Society. They have earned the support of the Medical Society. You are urged to review the committee report, discuss the society with the girls in the coffee bar, and encourage your medical assistant to participate in the activities of the group.

GENERAL INFORMATION

Registration

The registration fee of $15 includes one ticket to the banquet and dance on Tuesday evening, April 27th.

The registration desk will be located on the Mezzanine of the Hotel Marion on Sunday, April 25th, and will be open from 10:00 a.m. to 5:00 p.m. Registration cards and badges will be prepared in advance for the officers of the Arkansas Medical Society and for the county society delegates. Delegates are requested to present credentials in proper form when registering.

Registration will be in the vestibule of the Robinson Auditorium (Garland Street entrance) on Monday and Tuesday from 8:00 a.m. to 5:00 p.m. and on Wednesday from 8:00 a.m. to 12:00 noon. All members and visitors are required to register, as admission to all sessions will be by badge only. Bring your 1965 membership card to facilitate registration. Members of the American Medical Association from other states may register as guests. Special telephone service will be maintained at the registration desk—phone number FRanklin 6-4204.

Past Presidents' Breakfast

The Past Presidents' Breakfast will be held in the Assembly Room of the Marion Hotel at 7:30 a.m. on Wednesday, April 28th.

Fifty Year Club Breakfast

A breakfast for members of the Fifty Year Club of the Arkansas Medical Society will be held in the Assembly Room of the Marion Hotel at 7:30 a.m. on Tuesday, April 27th. Members of the Fifty Year Club are requested to make a reservation for this breakfast at the Society convention registration desk.

Golf Tournament

The Annual Golf Tournament will be played on Monday and Tuesday (April 26th and 27th) at the Rebsamen Golf Course. The tournament will be played under the Calaway System. Participants are to register and pay green fee at pro shop at Rebsamen. Dr. Austin Grimes of Little Rock is chairman of the tournament.

X-rays for MD's

The Arkansas Tuberculosis Association, the Arkansas Academy of General Practice, and the Arkansas Medical Society are co-sponsoring "X-Rays for MD's". An area to the left of the entrance to the exhibit hall has been set aside for this. All members are urged to take a few minutes to have a chest film made.

Davis Wolff Goldstein Dermatological Library and Research Fund

Dr. and Mrs. Davis W. Goldstein of Fort Smith have endowed a research fund and library for the Division of Dermatology at the University of Arkansas Medical Center in Little Rock. Dr. Goldstein donated his personal medical library of approximately one hundred fifty dermatological books as well as funds to maintain and expand the new facility. Dedication ceremonies will be held at the Medical Center on Saturday, April 24th, beginning at 4:00 p.m. followed by Arkansas Dermatological Society Social Hour and Dinner at Little Rock Country Club, 7:00 p.m.

Memorial Service

A joint Memorial Service of the Arkansas Medical Society and the Woman's Auxiliary will be held in the Lecture Hall of the Robinson Auditorium, beginning at 11:45 a.m. on Tuesday, April 27th. Dr. C. R. Ellis, president of the Society, will preside. The program for the service is as follows:

Invocation: Dr. Joseph A. Norton, Little Rock

Reading of the names of deceased members of the Society by Dr. Ellis:

Dr. A. V. Adams, Harrison
Dr. Samuel J. Allbright, Searcy
Dr. Shelby Atkinson, North Little Rock
Dr. George H. Butler, Fayetteville
Dr. Oliver W. Clark, Pine Bluff
Dr. K. W. Cosgrove, Little Rock
Dr. N. B. Daniel, Texarkana
Dr. D. A. Dickerson, Marked Tree
Dr. George L. Hardgrave, Clarksville
Dr. Claud S. Heffington, Fort Smith
Dr. John S. Hendricks, DeQueen
Dr. William C. Hensley, Charleston
Dr. Lynwood B. Jones, Helena
Dr. Charles E. Kennedy, Smackover
Dr. John H. Kilgore, Sr., Pine Bluff
Dr. Ralph A. Law, Little Rock
Dr. J. E. McGuire, Piggott
Dr. W. A. Nowlin, Roland
Dr. C. E. Oates, North Little Rock
Dr. W. B. H. Pool, Bodcaw
Dr. L. D. Reagan, Little Rock
Dr. Thomas E. Rhine, Thornton
Dr. B. A. Rhinehart, Little Rock
Dr. Jesse D. Riley, State Sanatorium
Dr. Julius K. Sheppard, El Dorado
Dr. James G. Thomas, Little Rock
Dr. Ewell I. Thompson, Little Rock
Dr. James L. Weathers, Salem
Dr. W. J. B. Williams, Cotton Plant

Reading of names of deceased members of the Auxiliary by Mrs. James W. Branch, Auxiliary president.

Memorial Address: Dr. Art B. Martin, Fort Smith

Music by Sextette from Arkansas Baptist School of Nursing, Little Rock

Benediction: Dr. Norton

Annual President's Banquet and Dance

The Annual President's Banquet and Dance will be held in the Ballroom of the Marion Hotel, beginning at 7:00 p.m. on Tuesday, April 27th. Dr. C. R. Ellis of Malvern, president, will preside. Dr. C. Lewis Hyatt of Monticello will be installed as the new president of the Society.

"What Is Happening" in Little Rock During Convention Week

Saturday, April 24th, Matinee and evening shows, Ice Capades, Barton Coliseum.

Saturday, April 24th, Little Rock Sertoma Club Annual Youth Talent Contest, Robinson Auditorium, Preliminaries Saturday morning and finals Saturday evening.

Young Arkansas Artists and Hawaiian Children's Art Exhibit at the Arkansas Arts Center (April 23rd through the 25th)

Arkansas Arts Festival (April 25-May 15) Festival includes concerts, opera, ballet and plays, as well as the following exhibits: Arkansas Artists Exhibit, Worthen Bank & Trust Company; Sculpture Show, Territorial Capitol Restoration; Photography, National Old Line Building; Advertising and Commercial Arts, First National Bank; Invitational Show, Medical Center; Regional Show, Arkansas Power and Light Building; Young Peoples' Show, First Federal Savings and Loan.

Specific information on festival performances will be included in mailing pieces about the convention.

BUSINESS SESSIONS

Meetings of the Council

The Council of the Arkansas Medical Society will meet as follows:

Sunday, April 25th, 1965, 12:00 noon, State Room, Marion Hotel

Monday, April 26th, 1965, 12:00 noon, State Room, Marion Hotel

Tuesday, April 27th, 1965, 12:00 noon, State Room, Marion Hotel

Wednesday, April 28th, 1965, 9:00 a.m., State Room, Marion Hotel

Wednesday, immediately following the adjournment of House of Delegates, brief reorganizational meeting

(The voting members of the Council are: The Councilors, the president, the first vice president, president-elect, secretary and treasurer. The Speaker, Vice Speaker, and past presidents are members ex-officio without vote.)

Reference Committee Hearings

Reference Committees appointed by the Speaker of the House of Delegates will hold open hearings to discuss the committee reports published elsewhere in this journal, as well as any supplemental reports and resolutions referred to them

during the convention. All members are urged to participate in the discussions at these meetings.

Reference Committee Number One will meet on Monday, April 26, at 10:00 a.m. in East Room of the Marion Hotel.

Reference Committee Number Two will meet on Monday, April 26, at 2:00 p.m. in West Room of the Marion Hotel.

First Meeting, House of Delegates

The First Meeting of the House of Delegates will be held on Sunday, April 25th, beginning at 3:30 p.m. in the Forum Room of the Marion Hotel. The order of business will be as follows:

Call to Order

Roll Call of Delegates

Introduction of Guests

Adoption of Minutes of the Eighty-Eighth Annual Session as published in the June 1964 issue of the Journal of the Arkansas Medical Society

Report of the Council

Report of Committees

(Reports as published in the March 1965 issue of the Journal may be amended by Committee chairmen. All reports will be referred to the Reference Committees.)

New Business

Announcement of vacancy on the Arkansas State Medical Board

Selection of Nominating Committee

Adjournment

Election to fill vacancy on the Arkansas State Medical Board

A vacancy occurs in the Third Congressional District, the counties of which are listed below. Members from these counties are urged to meet in the Forum Room of the Marion Hotel immediately following adjournment of the House of Delegates meeting on Sunday, April 25th, to vote for nominees. Nominations should be reported to the convention registration desk.

PRESENT MEMBER: Dr. H. J. Hall, Clinton, term expires December 31, 1965. Eligible for reappointment.

COUNTIES IN DISTRICT: Baxter, Benton, Boone, Carroll, Crawford, Franklin, Johnson, Logan, Madison, Marion, Newton, Scott, Searcy, Sebastian, Van Buren, Washington.

Final Meeting, House of Delegates

The final meeting of the House of Delegates will convene at 10:00 a.m. on Wednesday, April 28th, in the Lecture Hall of the Robinson Auditorium. The order of business is as follows:

Roll Call

Report of Nominating Committee

Election of Officers:

President-elect

First Vice President

Second Vice President

Third Vice President

Treasurer

Secretary

Speaker of the House of Delegates

Vice Speaker of the House of Delegates

Councilors (one from each of the ten districts)

Councilors whose terms expire are:

1. Eldon Fairley, Osceola
2. Paul Gray, Batesville
3. Paul Millar, Stuttgart
4. T. E. Townsend, Pine Bluff
5. George Burton, El Dorado
6. Karlton Kemp, Texarkana
7. Jack Kennedy, Arkadelphia
8. Payton Kolb, Little Rock
9. Stanley Applegate, Springdale
10. C. C. Long, Ozark

Delegate to the American Medical Association House of Delegates (term of J. W. Kennedy, Arkadelphia, expires December 31, 1965)

Alternate Delegate to the American Medical Association House of Delegates (term of Alfred Kahn, Little Rock, expires December 31, 1965)

Report of Reference Committees

Supplemental Report of the Council

Report of Committees

New Business

Selection of Time and Place of 1967 Meeting

Adjournment

AUXILIARY ACTIVITIES

The Forty-first annual convention of the Woman's Auxiliary to the Arkansas Medical Society will be held in Little Rock, Arkansas, April 25 through April 28

with headquarters at the Marion Hotel. Your tentative schedule of events is as follows:

Registration at Marion Hotel:

Sunday: 3:00 p.m. to 5:00 p.m.

Monday: 9:00 a.m. to 12:00 noon
3:00 p.m. to 5:00 p.m.

Tuesday: 9:00 a.m. to 12:00 noon

Sunday, April 25th

4:00 to 5:00 p.m.—Reception at the Marion Hotel by Mrs. James Branch, President, and Mrs. Charles Wilkins, President-elect, in honor of members of their boards.

Monday, April 26th

8:00 a.m. Pre-Convention Board meeting and breakfast.

9:30 a.m. Opening General Session, *Coach Room,* Marion Hotel

12:30 a.m. Luncheon, Forum Room, Marion Hotel, honoring Mrs. Jordan Kelling, President of Woman's Auxiliary to the Southern Medical Association
Ozarks Arts and Crafts—Ozark Folk Festival—Folk Singing! Post convention Board meeting following the luncheon.

Tuesday, April 27th

8:00 a.m. Past Presidents' Breakfast

9:30 a.m. Opening General Session, Coach Room, Marion Hotel

11:45 a.m. Joint Memorial Service with Arkansas Medical Society, Lecture Hall, Robinson Auditorium

1:00 p.m. Luncheon at "Top of Rock", honoring Mrs. Richard Sutter, President-elect of Woman's Auxiliary to the American Medical Association
"Hat Skit" and "Hat Show" Fun! Fun!
Tour of Doctor's Home following luncheon.

7:00 p.m. Banquet and dance with the Arkansas Medical Society, Ballroom, Marion Hotel

You all come, get your sitters now, and plan to attend this convention, we will have the necessary business, and a lot of fellowship, play and fun! The Welcome mat is out.

Willie Oates, Convention Chairman

Annual Committee Reports

COMMITTEE ON CANCER CONTROL

W. Martin Eisele, Chairman

The Committee on Cancer Control did not hold a meeting during the year 1964. The only activity was the liaison of the Chairman of the Committee with both the Arkansas Division of the American Cancer Society and the Arkansas State Cancer Commission. Meetings of these two organizations were regularly attended.

REPORT OF THE SUB-COMMITTEE ON NATIONAL LEGISLATION

Jae Verser, Chairman

The Committee on National Legislation spent an active year alerting physicians and educating the public to the necessity for understanding the true implications of the Medicare tax proposals known generally as King-Anderson bills.

A Speakers Bureau was organized and a clinic for the training and encouragement of speakers from the Medical Society was held in Hot Springs on January 17th. The clinic was attended by thirty selected speakers. The program was furnished by a department of the American Medical Association.

Speakers representing the Medical Society have spoken to numerous gatherings throughout the State during 1964 and 1965. This program should be intensified and expanded in order to counteract government-financed propaganda which has convinced a part of the American public that they will get complete medical care without cost. If the values of the traditional practice of medicine are to be preserved, it is absolutely necessary that doctors make the effort and take the time to inform the public of the true facts of legislation designed to give government medical care to any segment of the population. Since the election of a Congress and an Administration apparently dedicated to passing a bill for the health care of the aged, our task becomes more difficult. Greater sacrifices on the part of the doctors are called for if we are to defend our freedom to practice medicine in the best interest of the patient.

Your committee asks for the interest, dedication and active assistance of every doctor in Arkansas in the days ahead.

REPORT OF COMMITTEE ON PUBLIC HEALTH

Ben N. Saltzman, Chairman

Your chairman has been active this year in proposing and having adopted a program outlawing the use of chicken litter on the football playing fields of the State. He has enjoyed close liaison with the State Health Department and the State Health Officer. The sub-committees have been active, as will be noted in subsequent reports.

REPORT OF SUB-COMMITTEE ON RURAL HEALTH

Ben N. Saltzman, Chairman

The Chairman and members of the sub-committee have been active this year in the support of the Rural Community Improvement Program. The Chairman continues to act on the Board of the Rural Community Improvement Council and has participated in the Annual Meeting and in speeches made to three different Rural Community Improvement Clubs in the state. The problems of Rural Health have been brought to the attention of the members of the Medical Profession and the Rural people of the state.

The Chairman continues to hold membership on the Council on Rural Health of the American Medical Association and had recently been elected Vice Chairman of the Council. Plans are being made for the annual Rural Community Improvement meeting to be held March 11, 1965. Plaques will be presented to five clubs, regional winners of health projects. The communities will be honored by receiving recognition from the Arkansas Medical Society, attested by the plaques. The plans for the sub-committee include the development of a State Rural Health Conference along the lines set forth in seven previous conferences. The Committee on Rural Health enjoyed close liaison with the Woman's Auxiliary of the Arkansas Medical Society, the State Dental Society, the Agricultural Extension Service, the Farm Bureau, and the Extension Homemakers Council.

SUB-COMMITTEE ON LIAISON WITH THE STATE BOARD OF HEALTH

C. Lewis Hyatt, Chairman

This Sub-committee and its liaison with the State Board of Health has always functioned smoothly and effectively. As new public health problems arise and new programs are considered for inclusion in the over-all established program, the State Health Officer always seeks the consultation, advice, and approval of the State Board of Health, the Sub-committee on Liaison, and the final approval of the Council of the Arkansas Medical Society.

The State Health Department very efficiently administers both old established programs and the newer ones, i.e., Radiological Health, Accident Prevention, Chronic Disease Control, and its popular and much needed Nursing Home Visitation program which has been established in twenty-seven (27) counties of the state at the request of the various county or district medical societies.

Some of the major items affecting the public health that were presented to the Council during the year for approval were:

1. Family Planning Program to be administered by the Division of Maternal and Child Health. Approved.
2. Resolution regarding the cooperation of physicians with the State Health Department in its early efforts to eradicate syphilis. Approved.
3. Proposed legislative changes in the State Narcotic Act. Approved.
4. Proposed compulsory PKU blood testing (Phenylketonuria) of all infants before discharge from the hospital. The Council declined taking any positive action on this proposal. The thinking of the Council was that all qualified physicians would and should apply this significant test without a compulsory requirement.

SUB-COMMITTEE ON TUBERCULOSIS

Ben M. Lincoln, Chairman

The Sub-Committee on Tuberculosis did not have an official meeting during 1964 although there has been much interest and discussion between members of the Committee and people interested in Tuberculosis. A formal meeting of the Committee is being planned for April in Little Rock during the State Meeting. It is suggested that any problems should be called to the attention of the Committeeman prior to that time.

The Committee continues to support the Program of Tuberculosis Control as presented by the Division of Tuberculosis of the State Health Department. It is also being recognized that there is a need for better orientation of local community hospitals and physicians for the care of acute Tuberculosis.

REPORT OF THE SUB-COMMITTEE ON MENTAL HEALTH

William O. Yaung, Chairman

The Sub-Committee has met regularly during the past year. We have discussed questions referred to us by the President of the Arkansas Medical Society and have considered possible legislation which may be introduced in the present session of the Legislature. We have made recommendations concerning these subjects to the Council and to the Legislative Committee. Members of our Sub-Committee attended the second AMA Congress on Mental Illness and Mental Health last fall, and have attended other nationwide meetings of physicians on problems of mental health.

The residency programs in psychiatry at the State Hospital, the Medical Center and the Veterans Administration Hospital have continued to improve and expand. These programs are accomplishing much in supplying more psychiatrists for the State. The completion of the new State Hospital plant in Little Rock will aid this program as well as make great improvements in the care of psychiatric patients.

The State Health Officer, as the mental health authority, has worked with members of your Sub-Committee, other physicians and other interested groups in a study to determine the mental health needs of Arkansas so that we can make a comprehensive plan for the state to meet mental health needs. At this time the study is in its final stages and should be completed this year. This is a thorough study and will be extremely important and useful in the coming year. A similar study of mental retardation has been started. It is very important that all members of the Arkansas Medical Society participate in determining the needs of their own communities and help in planning to meet these needs.

The Sub-Committee wants to commend the Department of Psychiatry at the Medical Center for the excellent work that they have done in planning and organizing a program for postgraduate training in psychiatry for physicians in other fields. This program is flexible so that it can be fitted to the needs and conveniences of groups of physicians all over the state. There has been an increasing number of physicians throughout the state who have recognized the usefulness of psychiatric concepts and techniques in their own practices. However, this is not as general as it should be. We hope that the program which the Sub-Committee has helped organize at the Medical Center will stimulate more wide-spread interest in this area.

While many physicians are becoming interested and concerned about the problems of mental illness and mental health, many more groups of laymen are becoming interested and concerned about these problems. The Federal Government is moving much further into the field of medical care and the plan for establishment of mental health centers is high on their list of things that should be done. It is now more imperative than ever that the entire medical profession take more responsibility and assume leadership in local and state groups of laymen working in the field of mental health planning. We must be in a position to keep this part of medical practice under the control and supervision of physicians rather than give it up to laymen and to political appointees. If we lose this other parts of medicine will soon follow.

POLIO ADVISORY SUB-COMMITTEE

Roger B. Bast, Chairman

The Committee had no activities during the past year. In February 1965 a letter was prepared for distribution to all the members of the State Society recommending the use of Sabin live virus oral polio vaccine for routine polio immunizations. The marked superiorities of the Sabin live oral vaccine over the Salk injectable vaccine were pointed out and it was strongly recommended that the oral vaccine replace the injectable Salk vaccine in the routine immunization of all infants, children and young adults.

The Committee also recommends that consideration be given to the advisability of changing the area of responsibility of the Polio Subcommittee and changing its name. The incidence of poliomyelitis in Arkansas has been decreasing steadily since the introduction of polio vaccine in 1954. In 1964 there were *no* cases of paralytic polio reported in Arkansas. Thus, now and henceforth the responsibility of the polio subcommittee lies in making certain that a high level of immunization against polio be maintained in our state. At the same time the committee could also be concerned with improving and maintaining proper immunization against other diseases including diphtheria, pertussis, tetanus, smallpox, and measles. The committee could also offer recommendations to the members of the society regarding use of new immunization materials and procedures as these are developed in the future against other diseases.

In keeping with the above it is hereby recommended that the Polio Subcommittee name be changed to the Immunization Subcommittee and that it's area of responsibility be changed accordingly. If this be done the committee would continue to meet its responsibilities with regard to polio and in addition perform needed functions in the fight against other preventable diseases.

TRAFFIC SAFETY SUB-COMMITTEE

Lauise Henry, Chairman

The Traffic safety subcommittee met in Hot Springs, May, 1964, and in Little Rock January 1, 1965.

Conclusions reached: Arkansas desperately needs a central department for registry and issuance of motor vehicle drivers' licenses.

LIAISON COMMITTEE WITH VOCATIONAL REHABILITATION

R. V. McCray, Chairman

A meeting was held January 20, 1965, at 8:00 p.m. at Jud's Steak House, Hot Springs, Arkansas, of the Liaison Committee with Vocational Rehabilitation and the following members were present;

Robert Atkinson, M.D., Hot Springs, Arkansas

Thomas Durham, M.D., Hot Springs, Arkansas

Frank Kumpuris, M.D., Little Rock, Arkansas

R. V. McCray, M.D., Malvern, Arkansas

Guests were C. Randolph Ellis, M.D., Malvern, Arkansas, President, Arkansas Medical Society; John W. Cole, M.D., Malvern, Arkansas, Member of State Board of Education and Vocational Rehabilitation; and wives of those present.

We discussed spondylolisis and spondylolisthesis at length, and their feasibility as rehabilitation candidates. It was the unanimous opinion that these patients should be accepted to the program, *upon the advice* of the examining physician.

The matter of fees was also discussed and we decided a more reasonable fee of $10.00 minimum be paid the examining physician. We also decided that the surgical fee should be raised from the 60% level to a possible level of about 80%.

These things we feel are in line with other fees of this nature.

COMMITTEE ON MEDICAL EDUCATION

Lee Parker, Jr., Chairman

The medical education committee of the Arkansas Medical Society has had two called meetings this year: one in June in conjunction with graduation exercises at The Medical Center to which only the chairman came and the second at Lake Catherine Park in November with members of the committee, the Executive Council of the State Medical Society, the Executive Committee of the Medical School, Dean Shorey, and Mr. Whaley attending. Purpose of the meeting was to discuss mutual problems and to establish liaison.

Dean Shorey opened the discussion with a short resumé of Medical Center objectives. The basic problem of admissions was also discussed. Since all beds are operated primarily for teaching (education) purposes and secondarily for patient care, needy patients may be refused admission in order to maintain a variety of disease processes (there are enough hip fracture cases available to fill all orthopedic beds most of the time and this is obviously not good for teaching orthopedics).

Dr. C. R. Ellis reviewed some of the background of old problems between the Medical Center and the Medical Society. He and Dr. Lewis Hyatt expressed a desire for more GPs in the state.

Dr. Jim Kolb discussed the Whitaker report to be released soon and which will make certain recommendations regarding a Board of Family Physicians, GP residency programs and cessation of straight internships among other things.

A general roundtable discussion by everyone present then followed over the next two hours. General and specific problems were covered but it seemed to me that the following ideas evolved:

GPs want: 1) more GPs

2) Adequate post-graduate training programs for the new graduate and the practitioner

School wants: 1) to continue present undergraduate program and methods

2) a definite outline or guide for post-graduate training programs for GPs.

SUB-COMMITTEE ON POSTGRADUATE EDUCATION

George F. Wynne, Chairman

The Sub-Committee on Post Graduate Medical Education met October 14, 1964, at the University of Arkansas Medical School. The following members were present: Chairman; Dr. G. F. Wynne, Dr. Eli Gary, Dr. Winston K. Shorey and Mrs. Barbara Babb.

A very lively discussion occurred concerning the Post graduate courses offered at our medical school. These have been most helpful and fairly well attended. A list of these courses and the number attending them will be included in this committee report.

At the close of our meeting the following suggestions were presented as aims for the improvement of our Post Graduate Medical Education program:

1. It is recommended that the Arkansas Medical School and the Arkansas Academy of General Practice attempt to correlate their post graduate training program, scheduling if possible these courses twelve months in advance. If this is possible, then your committee will endeavor to have this schedule published each month in the Arkansas Medical Journal.
2. It is suggested that each course be on alternated days Wednesday or Thursday. In this way the various physicians who take off on Wednesday can attend the Wednesday course. Those who take off on Thursday can attend a Thursday course.
3. When funds are *available* it is suggested that the school move into the field of television teaching.
4. *Suggested* course for the future should include psychiatric courses, rheumatology courses and a practical course in the use of some of the newer drugs on the market.

POSTGRADUATE PROGRAMS 1963-64

Summary of Participatian

Course	Participants	Credit Hours	Total Credit Hours Earned
"Current Problems in Respiratory Disease" September 19, 1963	57	6	342
"Conference on Arthritis and Rheumatism: Stage II", October 31, 1963	40	7	280
"Current Therapy in Obstetrics—Gynecology" January 16, 1964	23	6	138
"General Pediatrics Conference" February 5 and 6, 1964	34	9	306
"Clinical Cases in Dermatology" March 12, 1964	29	6	171
"Disaster Casualties and Their Management" April 9, 1964	11	6	66
TOTAL	194	40	1,306

COMMITTEE ON HOSPITALS

John V. Busby, Chairman

A meeting of the Liaison Committee of the Arkansas Medical Society and the Council on Professional Practice of the Arkansas Hospital Association was held on February 4, 1965 at the Hotel Marion, Little Rock, Arkansas. Present were: Dr. John Price, Monticello; Dr. M. F. Harris, Newport; Dr. Joseph A. Buchman, Little Rock; Dr. John Busby, Little Rock; Sister Mary Columba, Morrilton; Mr. Robert C. Hardy, Little Rock.

The purpose of the first meeting of the Liaison Committee of the Arkansas Medical Society and the Council on Professional Practice of the Arkansas Hospital Association was to discuss mutual interests and make plans for an administrator-physician workshop. Dr. Busby opened the discussion by stating that one of the greatest problems facing hospitals and physicians is the rising cost of hospital care. Better understanding of this problem by physicians would permit more satisfactory interpretation to patients.

Mr. Hardy relayed the following suggestions made by Mr. Carlos Smith who could not attend the meeting: (1) Legal aspects of medical staff activities as they relate to nursing. (2) The increasing need for utilization committees to guard against over use of limited hospital beds. This will become more important as some form of Medicare is made available to the aged. (3) Relationship of nursing homes with hospitals. It was pointed out by Dr. Buchman that patients must be hospitalized before their admission to nursing homes if they are to receive benefits of continued care under Medicare. (4) Role of the chief of staff. The rotation of this position is often annual and may not permit the continuity necessary to assure effective medical leadership in the hospital. Dr. Buchman, Dr. Busby and Dr. Price discussed the method by which the hospitals in which they have privileges have overcome this handicap. At the Den-

ver Chiefs of Staff Conference conducted in October, 1964 by the University of Colorado School of Medicine a three year term was recommended for the chief of staff. (5) The changing philosophy of the University Medical Center. The University Hospital staff is experiencing an increasing number of referrals of patients with special medical problems and anticipates that in the future fewer patients will be admitted primarily because they are medically indigent.

Dr. Buchman commented on the transporting of patients injured in automobile accidents, the responsibility of physicians who aid the police in moving accident victims and the services provided by hospital emergency rooms.

Dr. Harris stated that he felt a workshop would be helpful to both physicians and administrators and suggested the private hospital as a topic for discussion. The subject of legal aspects of small hospital operation was suggested by Sister Columba. The recruitment of personnel in the field of health professions was discussed at length.

It was the consensus of the group that Dr. Busby and Mr. Hardy should prepare an agenda for the workshop and contact members of the committee by mail. Because of its central location, the Medical Center was suggested as the site for the workshop. A date for the meeting was not decided but all agreed that a fall workshop would be advantageous, perhaps on the Friday afternoon and Saturday morning prior to an Arkansas football game in Little Rock.

It was Dr. Busby's opinion that the proposed workshop should be the beginning of a series of such meetings of physicians and hospital administrators. A suggestion was made that the first meeting be directed toward hospital chiefs of staff as the physicians who have the most interest in medical staff-hospital relationships. The committee members speculated that such a workshop may attract an attendance of fifty to seventy-five physicians and administrators.

COMMITTEE ON PUBLIC RELATIONS

G. Thomas Jansen, Chairman

The formal activities of the Public Relations Committee for the year 1964-65, were quite limited. In addition to routine matters of assistance to the president, the medical societies participation in Arkansas Careers, Inc., on the campus of the University of Arkansas in Fayetteville, was our only new activity. It is my feeling that if this committee is to work with great efficiency, the public relations chairman and executive secretary of the society must be in close contact weekly or even daily. A geographic separation of the chairman from the executive secretary does not lend itself well to this close exchange of ideas. I would suggest it would be prudent to have the Public Relations Committee Chairman selected from the Fort Smith area.

If a more strenuous effort at formal public relations campaign activities are to be considered, such as billboard or poster campaigns or sponsored newspaper and television exposure, a more substantial budget will have to be considered.

SUB-COMMITTEE ON LIAISON WITH WOMAN'S AUXILIARY

J. W. Kennedy, Chairman

This Committee functioned throughout the year in an advisory capacity to the Auxiliary.

Mrs. James Branch, President of the Auxiliary, requested this Committee to present to the Council a "Team Membership Plan". This was done at the last Council Meeting.

ADVISORY COMMITTEE TO THE MEDICAL ASSISTANTS

Willie R. Harris, Chairman

The American Association of Medical Assistants is composed of more than 12,000 women employed by physicians as office nurses, medical secretaries, medical assistants, technologists, bookkeepers and office receptionists. The association holds an annual meeting in October of each year. A three day educational program is provided for the membership. To belong to the National Society, one must be a member of a County and State Society.

The objectives of this society is to inspire its members to render honest, loyal and more efficient service to the profession and to the public which they serve; to strive at all times to cooperate with the medical profession in improving public relations; to render educational service for the self-improvement of its members and to stimulate a feeling of fellowship and cooperation among the societies. These women come together in a common bond arising from common interests, a desire to share knowledge—to find more knowledge, to establish professional standards and to face issues in which they have a common concern. This Association, in its constitution, declares that it is not, nor shall ever become a trade union or collective bargaining agency. They also have an unwritten law that forbids any discussion about salaries, incidents of a private nature or financial status of an employer.

The Arkansas State Medical Assistants Society (ASMAS) has a membership of approximately 230 members with twelve county societies. Each county is represented in the affairs of the State Society by elected delegates, the number of delegates depending upon the county membership. Election of state officers takes place at the annual convention in April of each year. Any member may be a candidate for a state office. The Society also has two House of Delegates meetings each year to handle the affairs of the Society between conventions.

Three physicians are appointed each year to act as an Advisory Committee and the Executive Secretary of the Arkansas Medical Society is a permanent member of this committee. This committee is consulted on any vital issues of the Society where it is obvious that the approval of the Arkansas Medical Society is necessary before action can be taken. It also serves as a liaison agency with the council of the Arkansas Medical Society. Other than myself, this year the Advisory Committee is composed of Dr. Joe Norton, Little Rock, Dr. King Wade, Jr., Hot Springs, and Mr. Paul Schaefer, Fort Smith.

The dream of every medical assistant is to become a Certified Medical Assistant (CMA). However, dreaming is not enough—it takes study, work and more study to accomplish this. Mrs. Leodia Guenthner of Mountain Home is the only Certified Medical Assistant in Arkansas. To become a CMA you must pass rigid examinations in several categories including Medical Terminology, Anatomy, Medical Ethics and Etiquette, Medical Law and Economics, Office Skills, Examination Room Techniques and Laboratory Orientation. These tests are given in June of each year at centrally located test centers. A study outline may be obtained from the National AAMA office and several of our Societies are having study courses of the different subjects. You may be called upon to teach one of these courses. Other requirements for taking this test is to be at least 21 years of age, a high school graduate, have a minimum of 3 years experience in the office of a doctor of medicine, hospital or clinic and have at least 12 months continuous experience with one doctor, clinic or hospital. At the National Convention in Oklahoma City in October, for the third consecutive year, Merck, Sharp & Dohme presented a $5,000.00 grant

to the certification program.

Some of the highlights of the ASMAS in 1964 was the booth at the Medical Society Convention in Hot Springs in May; booth at the General Practitioners Convention in Little Rock in October; and the Moonshine Party at the AAMA National Convention in Oklahoma City in October. Also, the Society has been requested to attend the coffee bar at the Arkansas Medical Society Convention in April, 1965. Most of the County Societies have special projects each year. The Union County Society gives a Christmas party each year for the underprivileged children in that area. Jefferson County has a benefit dance each June and donates the proceeds to the Sunshine School for mentally retarded children. Arkansas County Society has a First-Aid Station at the County Livestock Show and World's Champion Duck Calling Contest each fall. Special educational programs are also planned for part of the monthly meetings. Recently Mr. Paul Harris, Executive Secretary of the Pulaski County Medical Society, spoke to that group on "Government Care of the Aged". Dr. Neil Crow, a Radiologist, presented a very interesting talk to the Sebastian County Society. The Ashley County Society had a program on "What to do in case of Nuclear War", presented by their County Health Nurse. Several of the other counties have had programs presented by the Smith, Kline & French Laboratories entitled "Miracles in the Making". The other monthly meetings are composed of "Bosses Nite", "Installation Banquets", "Christmas Parties" and work on a special current project.

The ASMAS has taken a definite stand against the King-Anderson Medical Bill and has written several letters to Congressman Mills expressing its opposition. Just this month a letter was written to Congressman Mills, with copies sent to all Arkansas Congressmen and Senators, again stating their opposition to this bill and favoring the proposal made by the American Medical Association.

The AAMA theme this year is "Knowledge is a treasure, but practice is the key to it". The state theme is "Certification through Education". The AAMA is composed of sincere, dedicated women who want to be of greater service to their employers, to patients, and to medicine.

When your office assistant tells you she would like to join AAMA, it is in your best interest, both professional and personal, to encourage her. If she should ask you to speak before a meeting of her local chapter, please do—you will be glad you did.

ANNUAL SESSION COMMITTEE

Thomas E. Townsend, Chairman

The convention program arranged by the Annual Session Committee appears in another section of this issue of the Journal.

COMMITTEE ON INSURANCE

Thomas D. Haneycutt, Chairman

The Insurance Committee of the Arkansas Medical Society has been engaged during the past year in one principal activity, namely, the discussion of the feasibility of forming a "Foundation" in the State of Arkansas for improvement and upgrading of the type of insurance policies sold in Arkansas.

Considerable discussion has been conducted among the committee members as well as with the Council of the Arkansas Medical Society and at this time the Insurance Committee is not ready to make a recommendation that the "Foundation" concept be attempted in Arkansas. The question is being studied further.

The Chairman of the Insurance Committee and two other members from the insurance committee are active on the HIP Committee, which is composed of hospital administrators, insurance writers and physicians.

The HIP committee during the past year has handled a considerable number of controversial questions between hospital and insurance carriers, insurance carriers and physicians, and physicians and insurance carriers with most of these problems having been satisfactorily solved.

An important feature, which is being added to all group insurance coverage in Arkansas as quickly as new policies are renegotiated, is the "co-ordination of benefits".

Physicians should become aware that beginning in 1965 more and more people will be covered by policies which prevents them collecting benefits from two insurance policies. At the present time this involves ten percent of the people covered by prepaid medical care policies in Arkansas and by the end of 1965 will involve some 85 percent of the people covered by group, prepaid medical care policies.

Briefly this "co-ordination of benefits" will work as follows: A man works for one company and his wife works for another company and both are covered by group insurance, the husband is hospitalized, his group carrier becomes the prime carrier with her group carrier being the secondary carrier. The prime carrier will be responsible for the benefits up to the limits of their policy and if any additional bills are owed the secondary carrier will become responsible for the additional payments up to the limits of their policy. Prior to the institution of "co-ordination of benefits" the husband would have been able to collect the full benefit of his policy as well as the full benefits of his wife's policy.

In the past persons going into the hospital and having two group policies were able to "make" money from their insurance, but with the institution of the new change it is conceivable that all his hospital bill will not be paid for under certain circumstances.

These "co-ordination benefits" have been instituted by the major insurance carriers as another method of preventing spiraling prepaid medical care.

SUB-COMMITTEE ON LIAISON WITH BLUE CROSS-BLUE SHIELD

A. S. Koenig, Chairman

Limitation of Liability of Blue Cross Contracts:

At the time of the 1964 annual session of the Arkansas Medical Society the House of Delegates passed a resolution in which the resolve was as follows: "Be it resolved that the Arkansas Medical Society requests the Board of Trustees of Arkansas Blue Cross-Blue Shield to consider development of a Blue Cross contract with indemnity provisions and limitation of liability, thus providing hospital coverage—although not complete—at a subscription cost which will be attractive to the older age people in this state." This resolution was transmitted to the Blue Cross-Blue Shield Plan and at a meeting of the Board of Trustees in Hot Springs, May 1964, the Professional Committee proposed that a Study Committee, consisting of members of the Board and staff, be appointed to explore, and recommend to the Board possible means of controlling further increases in subscriber rates; the Committee to also study the possibility of developing new concepts and other factors which would assist in obviating further increase in cost to the subscriber. The Professional Committee proposed that the Study Committee seriously consider devices which could be used to control liability of the Plan in Blue Cross contracts. The Board of Trustees approved this recommendation of the Professional Committee and the Study Committee is chaired by Mr. Tom H. Peavy, one of the lay members of the Board. It consists of two physicians, two hospital administrators and two lay Board members. Since that time

the Committee has had numerous meetings. It has devoted itself specifically to the possible development of a new old-age contract. The actuaries of the Plan have developed considerable information on costs and utilization. As yet, the Committee has not been able to develop any type of contract which would represent any improvement over the existing old-age contract. The Committee has made two interim progress reports to the Board of Trustees.

Out-Patient Diagnostic Procedures:

In November the Executive Committee of the Board of Trustees authorized Mr. Butler and his staff to conduct an experiment in out-patient diagnostic procedures to be conducted in two areas of the state. In these two areas, for a period of six months, out-patient diagnostic x-rays and laboratory tests would be paid for by the Plan, when done in a doctor's office or the out-patient department of a hospital. The purpose of this study is to determine if admissions to hospitals for purely diagnostic procedures could be reduced. The results of the experiment will be reported to the Board at its completion.

Adjudication Committee:

The Blue Cross contract which is sold in Arkansas states, as one of its provisions, that payment will not be made for diagnostic admissions. There have been several instances where requests for payment have been submitted to Blue Cross on admissions which, on the face of the record, were obviously for diagnostic purposes. There has thus frequently arisen a difference of opinion between the officials of the Plan and attending physicians about the definition of a diagnostic admission. For this reason, and for occasional specific instances of apparent improper claims, the Board of Trustees requested the Council of the Arkansas Medical Society to appoint an Adjudication Committee. The Plan has agreed to abide by recommendations of the Adjudication Committee in cases which are reviewed by it. The Plan prefers to utilize this procedure rather than making arbitrary decisions which could create friction and animosity between it and physicians in the state. At the meeting of the Council on January 24th, 1965, the Council voted to appoint such a committee to work with the Plan in adjudication of claims.

Careful Use Program:

The Blue Cross-Blue Shield Plan of Arkansas is undertaking a comprehensive educational program in the attempt to control utilization. This will be done through educational activities directed toward physicians, hospitals and the public at large. For this purpose, advertising, posters and brochures will be utilized. A motion picture has been suggested and the Insurance Committee of the Arkansas Medical Society has been authorized by the Council to assist in the development of this film.

Closer Liaison With Blue Cross-Blue Shield:

The Board of Trustees of Blue Cross-Blue Shield has always extended an open invitation to officers of the Arkansas Medical Society to attend any or all of the meetings of the Board of Trustees. At the meeting of the Council in January, 1965, the Council voted to approve the request of the President, Dr. Ellis, that the President, President-Elect, and the Executive Vice-President of the Society attend all meetings of the Board of Trustees. The purpose of this is to provide a closer tie and continuing flow of information between the Society and the Plan. It is still the policy of the Arkansas Medical Society to invite all physician trustees of the Plan to attend meetings of the Council.

COMMITTEE ON LIAISON WITH NURSING PROFESSION

T. Duel Brown, Chairman

The Committee on Liaison with the Nursing Profession has had very few problems this year, so, things have been going very nicely.

There is no outstanding activity to report.

FIRST DISTRICT PROFESSIONAL RELATIONS COMMITTEE

R. C. Shanlever, Chairman

During the year of 1964, our committee has reviewed several cases and so far as we know, all recommendations made were acceptable and we received no complaints.

SECOND DISTRICT PROFESSIONAL RELATIONS COMMITTEE

M. C. Hawkins, Jr., Chairman

There has been no occasion to call a meeting of the above named committee, for the year 1964.

The only questions which have arisen, which have been under my jurisdiction, have been charges for service rendered. On these occasions, these have been acceptably handled by the committee.

SIXTH DISTRICT PROFESSIONAL RELATIONS COMMITTEE

Paul Hughes, Chairman

The Professional Relations Committee of the Sixth Councilor District has had very little to do during the past twelve months. No major problems have been presented and minor ones have been handled without difficulty.

SEVENTH DISTRICT PROFESSIONAL RELATIONS COMMITTEE

C. F. Peters, Chairman

During the year of 1964, the usual number of Medicare claims were received and processed by the committee, apparently to the satisfaction of all concerned.

No threatened malpractice suits were brought before the committee.

STATE PROFESSIONAL RELATIONS COMMITTEE AND EIGHTH DISTRICT PROFESSIONAL RELATIONS COMMITTEE

Richard M. Logue, Chairman

The State Professional Relations Committee, of which the undersigned is Chairman, has met at intervals during the year 1964 and has reviewed, evaluated, and made recommendations on 111 Medicare Files.

Again there has been no call for official action by The Eighth Councilor District Professional Relations Committee. Informal advice has been rendered on several occasions apropos cases not falling strictly within the jurisdiction of this Committee.

ARKANSAS ADVISORY COMMITTEE TO THE SELECTIVE SERVICE SYSTEM

Gerald H. Teasley, Chairman

There has been very little activity of the Arkansas Advisory Committee to the Selective Service System during the year 1961. A few questions have been asked, but we have not been requested to determine the availability of any physicians nor dentists. Apparently, the needs of the military services have been filled through voluntary serv-

ice by the graduating physicians and to those who are completing the Berry Plan at the Medical Center.

REPORT OF THE ARKANSAS STATE MEDICAL BOARD

January 1, 1964 — January 1, 1965

Joe Verser, Secretary

The Secretary of the Arkansas State Medical Board makes the following report of the activities of this Board since the last meeting of the Arkansas Medical Society:

The Officers and Members are as follows:

Jeff Baggett, M.D., Chairman
Hugh R. Edwards, M.D., Vice-Chairman
Joe Verser, M.D., Secretary-Treasurer
Garland D. Murphy, Jr., M.D.
Frank M. Burton, M.D.
Wm. A. Snodgrass, Jr., M.D.
H. J. Hall, M.D.
Earle D. McKelvey, M.D.
John F. Guenthner, M.D.
Eugene R. Warren, Attorney

The Board investigated every case of violation of the Medical Practice Act reported to the Secretary during the year. Seven court convictions were obtained and three cases are now pending. Seven injunctions were issued. The Board revoked the licenses of three physicians.

A yearly financial report of the Board's activities, prepared by Johnston, Freeman & Company, Certified Public Accountants, was sent to and approved by the Council of the Arkansas Medical Society.

Following is a report of the Board's proceedings during the past year:

Physicians registered for 1964:	
Resident	1,636
Non-resident	1,039
Physicians licensed by examination	70
Physicians licensed by reciprocity	32
Physicians certified to other states	94
Licenses revoked for non-payment of annual registration fee	20
Licenses suspended for non-payment of annual registration fee	24
Court convictions obtained	7
Cases pending	3
Injunctions issued	7
Physicians placed on probation for violation of Federal Barbiturate Act	6
Licenses revoked	3

FINANCIAL REPORT

January 1, 1964 — January 1, 1965

Cash balance in bank— January 1, 1964	$ 4,940.11	
Cash on hand	19.00	
Time deposits	20,556.01	
		25,515.12
RECEIPTS:		
Registration fees	7,499.00	
Certification fees	1,356.00	
Reciprocity fees	3,700.00	
Examination fees	4,450.00	
Directories	558.00	
Physical Therapy fees and dues	201.00	
Medical Corporation dues	230.00	
Miscellaneous	338.75	
Interest on time deposits	530.57	18,863.32
Total Cash Available		44,378.44
DISBURSEMENTS:		
Salaries, FICA Taxes, Board Members' fees & expenses	10,245.54	
Attorney's fee, expenses and investigations	3,943.49	
Dues and expenses to Federation of State Boards of U. S.	600.00	
Office rent, supplies, printing, telephone & postage	2,903.20	
Refund of fees	201.50	
CPA Audit	175.00	
Physical Therapy expense	35.00	
Miscellaneous—returned checks, bond, box rent, etc.	93.00	18,196.73
Cash balance in bank— January 1, 1965	5,095.13	
Time deposits	21,086.58	26,181.71
		$44,378.44

REPORT OF THE DELEGATE TO THE AMA

James M. Kolb, Delegate

Clinical Convention. Health care for the aging, a new teletype communications system for the medical profession, a statement on human reproduction and recommendations from the Commission on the Cost of Medical Care were among the major subjects acted upon by the House of Delegates at the American Medical Association's 19th Clinical Convention held November 29-December 2 in Miami Beach, Florida.

Tribute was paid to the late Dr. Norman A. Welch, AMA President who died on September 3, in a memorial statement from the Massachusetts Medical Society and in a resolution adopted by the House.

Dr. James Z. Appel of Lancaster, Pa., vice chairman of the AMA Board of Trustees and a member of the Board since 1957, was named President-Elect of the Association. He will become President in June, 1965, succeeding Dr. Donovan F. Ward of Dubuque, Iowa, who took office after the death of Dr. Welch.

To take Dr. Appel's place on the AMA Board of Trustees, the House elected Dr. Joseph B. Copeland of Austin, Texas, who for the past year has been serving as Deputy Commissioner of Health in the State of Texas.

Final registration at the convention reached a total of 9,356, including 4,118 physicians.

Health Care for the Aging

Definitive action on the issue of health care for the aging came with the House of Delegate's strong endorsement of Dr. Ward's Monday address, in which he declared that "We have no choice except to stand firm in our efforts to prevent the standards of health care in this country from being undermined by a radical departure from the unique American way which has accomplished so much for mankind."

Reaffirming the Association's opposition to the King-Anderson type of legislation, Dr. Ward said:

"If we have been right in the past—and that is our unshakeable belief—then we are right today. And we shall be right tomorrow."

Calling for renewed, intensive effort to prevent the passage of such legislation, he pointed out that "we do not, by profession, compromise in matters of life and death. Nor can we compromise with honor and duty."

Dr. Ward, expressing pride in the medical profession, concluded his address with these statements:

"I pray that we all gain strength for renewed effort by the simple reflection that what we are doing is worthwhile

—that if the effort is great, the results of not making the effort would be unthinkable—and, finally, what we are doing is vastly more important than ourselves.

"No more can be asked of us as citizens. No less should be offered by us in guarding our heritage of freedom."

To implement the ideas in Dr. Ward's address, the House gave unequivocal approval of a Board of Trustees suggestion that an expanded educational program be conducted in the next few months. In asking for this approval, the Board pointed out that "a variety of techniques and media must be utilized if the public, the Congress and special audiences are to be reached effectively."

The House took no action on three resolutions which would have altered the AMA position on health care legislation. Instead, the House adopted a resolution which urged "component associations to stimulate the state and local governments to seek the fullest possible implementation of existing mechanisms, including the voluntary health insurance principle, to the end that everyone in need, regardless of age, is assured that necessary health care will be available."

The state medical societies also were urged to send representatives to two forthcoming conferences related to the issue of health for the aging—one on December 13 to help plan the new educational program and the other on January 9-10, 1965, to consider further implementation and expansion of the Kerr-Mills programs.

Teletype Communications System

The House approved a recommendation from the Board of Trustees for establishment of a tele-typewriter communications service between the AMA and the state medical societies. The system will provide automatic and uninterrupted communications between AMA Headquarters and all participating state societies, and between the state societies without involving the facilities at the AMA Headquarters. The system also will enable any state society to communicate with all other TWX subscribers in the United States and Canada.

In approving the recommendation, the House emphasized that participation is optional with the state medical societies but it also urged each society to "seriously consider taking advantage of this rapid communications system." Installation and rental costs for the teletype equipment, both at AMA Headquarters and at the headquarters of each participating medical society, will be paid by the AMA. The cost of transmitting messages will be paid by whichever organization originates each message. It is hoped that the new communications system will become operative no later than July 1965.

Human Reproduction

Updating its policies on population control, "to conform to changes in society and medicine" and to "take a more positive position on this very important medical-socio-economic problem," the House adopted the following four-point statement:

"1. An intelligent recognition of the problems that relate to human reproduction, including the need for population control, is more than a matter of responsible parenthood; it is a matter of responsible medical practice.

"2. The medical profession should accept a major responsibility in matters related to human reproduction as they affect the total population and the individual family.

"3. In discharging this responsibility, physicians must be prepared to provide counsel and guidance when the needs of their patients require it or refer the patients to appropriate persons.

"4. The AMA shall take the responsibility for disseminating information to physicians on all phases of human reproduction, including sexual behavior, by whatever means are appropriate."

In taking the action, the House also recommended that the AMA cooperate with the appropriate voluntary organizations in the field of human reproduction which have adequate medical direction.

Commission on the Cost of Medical Care

With modifications suggested by the Board of Trustees, the House approved 33 recommendations from the Commission on the Cost of Medical Care. The suggestions had been rearranged by the Board into four sections—Research, Hospitals, Physicians and Miscellaneous. In accepting the Board report, the House also rejected a floor amendment which recommended that a medical advisory committee composed of practicing physicians be appointed to supervise the several studies which were suggested.

In presenting its conclusions and recommendations to the Board of Trustees, the Commission on the Cost of Medical Care expressed the hope "that the recommendations which are approved will help promote the wisest possible use of the medical care dollar and aid in the development of more meaningful data on the cost of medical care."

The House learned that a substantial number of the studies recommended by the Commission are already under way and that others are in the process of being implemented. The House also emphasized its appreciation of the importance of these continuing studies and urged that adequate funds be provided for maximum implementation of the recommendations.

Miscellaneous Actions

In considering a wide variety of annual reports, special and supplementary reports and resolutions, the House also:

Amended the Bylaws to permit the presidential inauguration to take place at a time other than Tuesday evening and approved a suggestion that the inaugural ceremony at the 1965 Annual Convention to be held on Sunday, June 20;

Amended the Bylaws to permit presentation of the AMA Distinguished Service Award at a time to be determined by the Board of Trustees and learned that the Board wishes to present this award at the Scientific Awards Dinner;

Agreed that the AMA should cooperate with the U. S. Public Health Service in eradicating the Aedes aegypti mosquito from the American hemisphere;

Urged strong support of the Woman's Auxiliary and asked the state and county medical societies to give serious consideration to the idea of joint husband-wife membership;

Agreed that a section on Space Medicine should not be created at this time;

Emphasized its continuing awareness of the demand for action on satisfying the need for increasing numbers of family physicians;

Urged all state and component medical associations to approve, where feasible, the inclusion of a voluntary, non-deductible contribution to independent political action committees on the society's annual dues billing statement;

Approved a Board recommendation that the 1967 Clinical Convention be held in Houston, Texas;

Agreed with the Board that there should not be an increase *in AMA dues at this time;*

Reaffirmed its approval and support of the National Council for Accreditation of Nursing Homes and

Instructed the Board to re-evaluate the mission of the Commission on Medical Practice and take Appropriate action.

The American Medical Association Education and Research Foundation reported to the House that one out of

every six medical students, interns and residents in the U. S. is now receiving financial assistance from the Foundation's loan fund. The AMA-ERF also announced that Merck Sharp & Dohme pharmaceutical company has made its fourth $100,000 contribution to the loan fund and has pledged an additional $100,000 in 1966.

Special Session. Meeting in a two-day special session here to review current health care legislation, the House of Delegates of the American Medical Association gave unanimous approval and support to the AMA Eldercare Program and to the Herlong-Curtis Eldercare bill (H.R. No. 3727), which embodies the basic principles of the AMA program.

In acting upon six resolutions and reports from the AMA Board of Trustees, Council on Legislative Activities and Council on Medical Service, the House of Delegates also:

1. Reaffirmed its opposition to the King-Anderson bill (H.R. 1 and S. 1) and all similar measures;

2. Commended the Board of Trustees and its Task Force for implementing and funding a program of public education on the AMA Eldercare Program and gave them a standing vote of confidence;

3. Called for study of the "desirability and feasibility of extending the principle of federal and state aid under the Kerr-Mills principle to persons below the age of 65 who need help";

4. Adopted a statement on Standards for Health Care Programs, and

5. Urged that the professional services of pathologists, radiologists, physiatrists and anesthesiologists should be excluded from the provisions of any bill which excludes other physicians' services.

Dr. Donovan F. Ward, president of AMA, addressed the House of Delegates, condemning the King-Anderson Bill and urging support of the Eldercare Program, told the House on the first day of the Special Session:

"Are 200,000 doctors wrong in urging the Congress to give serious consideration to the one measure now before it that offers genuine medical and hospital benefits to the needy aged? This is a bill authored neither by the Republican party nor the Democratic party. It is a bill with bipartisan parentage—the Herlong-Curtis Eldercare bill, numbered H.R. 3727. We urge Congress to compare, and the people to compare, this bill with its genuine benefits and realistic financing—and with its provision allowing for administering a health program through health agencies of the states—to compare it feature-by-feature with Medicare.

"If the drums can be stilled long enough to make this comparison, it will be found that the Herlong-Curtis Eldercare bill can cover not only the cost of hospital care and nursing homes for the aged, but also payment of physicians and surgical and drug costs—which Medicare would not do."

Dr. Ward declared that "it is never too late to pass good legislation and defeat bad legislation. The one thing in this historic decision—the only thing—that may truly come too late, is regret."

Education Program

Dr. Percy E. Hopkins, Chairman of the Board of Trustees, reported to the House that the AMA's current effort to tell its story to the people and to the Congress is being financed through the allocation of a portion of the Association's reserve fund. In response to a number of questions raised during the open discussions, the delegates also were told that the education program will not require a dues increase or a special assessment. The program will be national in scope—involving magazines, radio and television—but maximum grass roots effort was urged upon the entire AMA membership and the Woman's Auxiliaries.

Standards for Health Care Programs

The House adopted the following principles as essential to sound health care programs:

1. No person needing health care shall be denied such care because of inability to pay for it.

2. It is appropriate that government revenues be used to finance health care when other resources have been found to be inadequate.

3. Every level of government (municipal, county, state and federal) should assume a responsible share in the financing of such programs.

4. The health care provided by such programs should be adequate and should be equal in quality to that available to those who can afford to pay.

5. Maximum use should be made of voluntary prepayment and insurance mechanisms.

6. Administration of such a program should be the responsibility of the state government. Participating states should be required to meet adequate standards of administration in order to qualify for federal funds.

7. Eligibility requirements for benefits should be fair, realistic, uncomplicated and practical.

8. Any such health care program should provide funds only, and not direct services.

9. Funds for such programs should come from general tax revenues and not from Social Security taxes.

BUDGET COMMITTEE

W. R. Brooksher, Chairman

The Budget Committee has approved the following budget for 1965:

INCOME

Budget Item		
Membership dues		$ 49,880.00
Journal Advertising		
Local	$ 5,700.00	
National	12,500.00	18,200.00
Booth Income		6,400.00
Annual Session Income		6,000.00
AMA Reimbursement		500.00
Income from Medicare		8,880.00
Miscellaneous and Rosters		100.00
Interest on Bonds		1,900.00
Retirement		270.00
		$ 92,130.00

EXPENSES

Budget Item		
Salaries		
Medicare	$ 6,110.00	
Journal	10,000.00	
AMS	19,327.50	$ 35,437.50
Travel & Convention		10,000.00
Taxes		
Medicare	200.00	
AMS	716.00	916.00
Retirement Fund		
Medicare	500.00	
AMS	3,533.00	4,033.00
Stationery & Printing		
Medicare	60.00	
AMS	1,640.00	1,700.00
Office Supplies & Expense		
Medicare	1,800.00	
AMS	2,200.00	4,000.00
Telephone & Telegraph		
Medicare	400.00	
AMS	2,300.00	2,700.60

Rent		
Medicare	700.00	
AMS	1,436.00	2,136.00
Postage		
Medicare	500.00	
AMS	3,000.00	3,500.00
Insurance and Bonds		
Medicare	160.00	
AMS	440.00	600.00
Auditing		
Medicare	475.00	
AMS	300.00	775.00
Council Expense		750.00
Journal Printing & Expense		20,000.00
Annual Session		8,050.00
Senior Medical Day		400.00
Public Relations		500.00
Dues & Subscriptions		1,130.00
Contributions & Gifts		600.00
Woman's Auxiliary		1,200.00
Legal Services		5,900.00
Special Committees		4,400.00
Rural Health		500.00
Miscellaneous		200.00
Freight & Express		50.00
Office Equipment		420.00
		$109,897.50

The above budget foresees a deficit of $17,767.50.

CONSTITUTIONAL REVISIONS COMMITTEE

Louis K. Hundley, Chairman

The following proposed amendments were read for the first time at the House of Delegates meeting during the 1964 Annual Session, were published in the June 1964 issue of the Journal of the Arkansas Medical Society, and will be presented for final action at the 1965 meeting of the House of Delegates:

1. *Amend the By-Laws, Chapter VIII, Section 1(A)* to add as Committee Number 11 the Committee on Medicine and Religion.

2. *Add to Chapter VIII of the By-Laws:*

Section 12. The Committee on Medicine and Religion shall work to create and enhance communication between the physician and the clergyman which will lead to the most effective care and treatment of the patient in which both are interested. It shall study the areas in which there is or may be continuing correlation involving medicine and religion.

As directed by the Council of the Arkansas Medical Society at its meeting on November 1st, the Committee has drafted the following proposed changes in the Constitution to make attendance at orientation programs a requirement for regular membership in the Society.

BY-LAWS

Chapter I. Membership

Change Section 1:

(a) The name of a physician on the properly certified roster of members of a component society which has paid its annual assessment, shall be prima facie evidence of membership in this Society.

(b) Membership in this Society shall consist of the following classifications:

(1) Provisional
(2) Regular
(3) Life
(4) Affiliate
(5) Affiliate membership as intern or resident
(6) Military

[This change makes the old "Section 1" now "Section 1 (a)" —"(b)" is a new addition to the section]

Chapter IX. COUNTY SOCIETIES

Changes Section 5 as follows:

Section 5. Officers.

(a) Elections

Component societies shall consist of not less than five members, and there shall be a president, secretary-treasurer and board of censors as set forth in (b) and no member can hold more than one of such offices at one and the same time. There may be such other officers as may be required, including vice-president and board of trustees, also delegates and alternates to the state society. The term of all officers except the censors shall be for one year. All officers and delegates to the State Society shall be elected during the month of December or at the last meeting of the year in the instance there is no meeting in that month. Vacancies in the offices referred to in this by-law shall be filled in the manner stated in the society hy-laws; but when no provisions are thus made for any such contingency, such vacancies shall be filled by the component county society president, until the time for the annual election of officers.

(b) Election of Censors

(1) In those county societies of less than 200 members, the Board of Censors shall be composed of three members. The term of office of the censors shall be three years, and they shall be so elected that but one vacancy normally occurs each year.

(2) In those county societies of more than 200 members, the society *may* elect to increase the Board of Censors from not less than three (3) to not more than seven (7) members. The censor shall serve terms of three (3) years and then elections shall be so arranged that no more than three (3) shall be elected in any one year except for the first year that the society elects to increase the size of the board. This year the election of the additional members shall be so arranged that the terms of office of newly elected members shall not conflict with the future election of members as described above.

["(a)" and "(b)" above are new additions to Section 5 providing for board of censors, principally]

(c) Delegates

At some meeting in advance of the annual session of this Society, each county shall elect a delegate or delegates to represent it in the House of Delegates of this Society, in the proportion of one delegate to each twenty-five members, and one for each major fraction thereof, and the secretary of the county society shall send a list of such delegates to the secretary of this society at least ten days before the annual session.

[This is the old Section 11 of Chapter IX. No change has been made in the text of the paragraph, it has just heen moved from one section to another.]

(d) Secretaries

(1) The Secretary of each component society shall keep a roster of its members and of the non-affiliated registered physicians of the county, in which shall be shown the full name, address, college and date of graduation, date of license to practice in this State and such other information as may be deemed necessary. In keeping such roster the secretary shall note any changes in the personnel of the profession by death, or by removal to or from the county, and in making his annual report, he shall endeavor to account for every physician who has lived in the county during the year.

(2) The secretary of each component society shall forward its assessment together with its roster of officers and members, list of delegates, and list of non-affiliated physicians of the county, to the secretary of this Society on

January 1, and not later than March 1 of each year.
["(d) (1) & (2)" above are old sections 12 and 13, no change in text, just re-numbering]
(e) Board of Censors

The Board of Censors of component county societies shall examine into and report on the qualifications of applicants for membership in their respective organizations and shall ascertain from the Executive Secretary what the records of his office show in regard to the past conduct of any such applicants, before making report to their respective societies.

The Board of Censors shall review the record of each provisional member at the termination of the provisional period and shall present the same to the society with recommendation for or against regular membership.

The Board of Censors will provide supervision and guidance in matters of medical ethics and etiquette for provisional members. Any time during the provisional period they may recommend to the society that the provisional members be dropped from the society and this may be done by a two-thirds (⅔) majority vote of those present and voting at a regular meeting of the county medical society.

The Board of Censors shall supervise the ethical deportment of all the members of its Society and shall counsel individual members where warranted.
["(e)" is a new addition to Section 5 providing for responsibility of Board of Censors]

Chapter IX. COUNTY SOCIETIES

Section 6. Members

(a) Each county society shall judge the qualifications of its own members, but as such societies are the only portal of this society and to the American Medical Association, every reputable physician who possesses the eligibility qualifications for membership required by Article IV, Section 2, of the Constitution of this Society, and who does not practice or claim to practice nor lend his support to any exclusive system of medicine shall be eligible to membership. No physician or surgeon who solicits patients or business for himself, or for an association or other organization of which he is a member, or by which he is employed, or in which he is interested, shall be eligible for membership in this Society, and no physician who works for, is employed by, or is interested in, any association or organization which solicits patients, members or physicians, shall be eligible for membership in this Society. Any member of the Society who shall hereafter violate any of the provisions hereof shall be expelled from the Society. Before a charter is issued to any county society, full and ample notice shall be given to every such physician in the county to become a member.
(b) Classification of members

(1) Provisional

Component county societies shall provide a provisional period for applicants seeking membership in their county society of twenty-four (24) months. New members accepted on a provisional basis shall have all the privileges of regular membership in the society, except as provided in this section of these by-laws and in Section 5 (e).

Provisional members shall not have the right to hold elective office, endorse application for membership or serve as a delegate or alternate delegate to the Arkansas Medical Society.

When a provisional member is dropped from the county medical society before the end of the provisional period by means provided in Section 5 (e) of this chapter, he may not apply again for membership in any component county medical society for a period of one year if he continues to reside under the jurisdiction of that component county medical society.

At the end of the provisional period, a provisional member *shall* again be considered by the Board of Censors of said component county medical society, and elected by same before his membership becomes permanent.

If, at the end of the provisional period, the provisional member fails to be elected to regular membership, the Board of Censors of said component county medical society will provide counsel directed toward rehabilitation of the rejected physician. The rejected physician may also request the Board of Censors to recommend to the society a further period of provisional membership; and it *may* be granted, the time at which it may begin and the duration of the additional provisional period to be stipulated by the Board of Censors in its recommendation in each individual case, though it may not exceed a period of one year from the date of rejection by the county society. At the end of this additional period of provisional membership, the candidate will again be considered by the Board of Censors, who will place his name before the county society again with recommendation as to acceptance or rejection. If the provisional member fails to be elected to regular membership after the second provisional period, he may not again apply for provisional membership in any component county society until one year has elapsed after the second rejection by the society or upon appeal to the Council of the State Medical Society as provided in Section 7, Chapter IX of these by-laws.

All provisional members shall have attended at least one orientation program given by the Arkansas Medical Society before being considered for regular membership. Qualifying orientation programs shall be offered at the time and place of the Annual Session of the Arkansas Medical Society and at one other time as set by the Council during each year.

Intern membership, resident membership and military membership shall not be considered as a substitute for any part of the twenty-four (24) months of provisional membership.

Any member accepted on transfer from another component county medical society shall also serve twenty-four (24) months as a provisional member and shall attend the orientation program, unless such member has previously attended the orientation program presented by the Arkansas Medical Society, before being considered for regular membership.

(2) Regular

The acceptance of the privilege of regular membership carries with it the obligation and privilege to assume the duties of any office to which the member may be elected or appointed by the county medical society and the Arkansas Medical Society.
["(a)" above is old Section 5, "(b)" is new addition to by-laws establishing provisional, regular & special memberships.]

(3) Special Memberships

(a) Life

An active member who shall have attained his eightieth year and shall have been a member of his county medical society in Arkansas or elsewhere in the United States continuously since beginning the practice of medicine, or who for fifty years shall have been continuously a member of his county medical society in Arkansas or elsewhere in the United States, shall, upon establishing the above facts to the satisfaction of his county medical society, and upon the recommendation of such society, be granted the status of a Life Member. Such member shall enjoy full membership privileges and shall be exempt from the payment of further dues or assessments.

(b) Affiliate

An active member in good standing in his county society may, upon the recommendation of such society, be granted affiliate membership with full voting and other privileges where one or more of the following conditions exist: re-

tirement from active practice, physical or other disability of a character preventing the practice of medicine, a serious and prolonged illness, or financial reverses. Affiliate membership shall be on an annual basis only and a member must be recommended each year for such special status by the secretary and president of his county medical society following a review and reassessment of his particular situation. An affiliate member shall enjoy full membership privileges and shall be exempt from the payment of dues and assessments during the year in which he is granted such status, and a certificate of membership shall be issued to him for such year.

(c) Affiliate for Interns and Residents

An annual affiliate membership shall be granted interns and residents, provided they are fully or partially excused from the payment of county society dues, and provided the request for exemption is transmitted through a component society of the Arkansas Medical Society. The requirement for active membership prior to exemption shall be waived for such affiliate members. This type of member shall be accorded full privileges except that he may not vote or hold office, and he shall receive the Journal of the Arkansas Medical Society.

(d) Military

Regular members of the Arkansas Medical Society who are in the service of the armed forces of the United States, not as career officers, may be classified as military members, and carried on the rolls of their respective county societies as such. Military members shall have a waiver of dues during the time of service, provided that they are in good standing at the time they entered the armed forces. Military members shall enjoy full membership privileges and certificates of membership shall be issued to them for each year.

Section 7. (Old Section 6)
Section 8. (Old Section 7)
Section 9. (Old Section 8)
Section 10. (Old Section 9)
Section 11. (Old Section 10)
Section 12. (Old Section 14)

Above sections re-numbered only. No change in text proposed.

[Old Section 11 was transferred to Section 5 (c); Section 12, 13, to Section 5 (d)]

REPORT OF THE COUNCIL

H. W. Thomas, Chairman

The Council met on August 30th and transacted business as follows:

1. Approved the appointment of Dr. Charles Wilkins of Russellville to the Tenth Councilor District Professional Relations Committee.
2. Approved Executive Committee action advising Arkansas congressional members of Society opposition to the inclusion of physicians under social security and authorizing president-elect Dr. C. Lewis Hyatt to attend the AMA Public Relations Institute.
3. Heard a discussion on Foundations for Medical Care Plans and voted to request the insurance committee to study the program and report to the Council on November 1.
4. Voted to cooperate with the AMA in its Public Education Program during months of September and October.
5. Authorized travel for the chairman of the Committee on Aging to attend a conference on aging in Oklahoma City.
6. Left processing of membership in the State Medical Society up to the discretion of the Executive Secretary when the applicant is operating with a temporary license to practice medicine in this State.
7. Directed the Executive Secretary to write Mr. Mills in appreciation of his continued opposition to social security health legislation.
8. Directed the Executive Secretary to obtain comparative costs and benefits of the social security program and private insurance for physicians entering the social security system at ages 20, 40, 60, and 65 years for distribution to the membership.
9. Voted to submit the name of Dr. Flanagan at the Medical Center as a nominee for the Junior Chamber of Commerce award for the ten most outstanding young men of the year.
10. Voted to advise Arkansas Congressional members that the Society supports a bill requiring all federal cars to possess minimal crash safety features.
11. Voted to employ guards at the doors of all meetings of the annual session, including specialty sections, with instructions to admit only those wearing registration badges.
12. Heard a letter protesting increased clerical demands by the Joint Commission on Hospital Accreditation on the staff of the hospital. The Council voted to instruct the Arkansas delegates to the AMA to work to modify new requirements demanding more clerical work.
13. Voted to refer to the county societies involved a proposal by the Department of Health, Education, and Welfare for health surveys.
14. Voted to schedule a visit to the Arkansas Children's Colony in conjunction with an anticipated meeting of the House of Delegates in December.
15. Voted to commend St. Vincent Infirmary on their new educational program.
16. Accepted an invitation to meet at Lake Catherine State Park on November 1st.

The Council met on October 31st and conducted the following business:

1. Agreed to co-sponsor a "Chest X-Ray for Every M.D." at the 1965 annual session, with the Arkansas Tuberculosis Association and the Arkansas Academy of General Practice.
2. Referred a proposed bill on traffic safety to the Legislative Committee for its recommendation.
3. Directed the Executive Committee to study the program of the Arthritis Foundation and make a recommendation on its request for Society approval.
4. Voted to have a certificate drawn up and presented to Dr. Nedrow of Arkansas State College in recognition of his work on behalf of medical science.
5. Heard a "petition of discontentment" from interns and residents of Memphis and requested the Society counsel to reply, expressing approval of their action.

The Council met on November 1st and transacted the following business:

1. Heard a report on a harmonious meeting of the Executive Committee, Committee on Medical Education, and the Department Heads and Dean of the University of Arkansas Medical Center.
2. Voted to commend the insurance committee for its work regarding the study of the Foundations for Medical Care Plans and requested that the committee continue its study and report back at a later date.
3. Voted to ask the Professional Relations Committee to adjudicate disputed claims between participating physicians and Blue Cross-Blue Shield.
4. Adopted a resolution proposed by Dr. Easley expressing willingness to participate in a national program for the eradication of syphilis.
5. Voted to change the location for the 1966 Annual Session from Little Rock to Hot Springs.
6. Decided to hold a Council meeting December 6th immediately preceding a special meeting of the House of

Delegates.

7. Directed Constitutional Revisions Committee to propose necessary changes to make attendance at orientation programs a requirement for regular membership in the Society.
8. Approved the staging of a speaker's clinic and appointed Dr. Joe Verser as chairman.
9. Voted to again man the first-aid facility during the 1965 session of the Arkansas Legislature.
10. Directed councilors to contact county societies in their area as to whether or not to support the proposed increase in AMA dues and to report to Dr. Kolb.
11. Decided to purchase subscriptions to Dr. Marjorie Shearon's legislative newsletter for every voting member of the Council of the Arkansas Medical Society.
12. Approved the appointment of Dr. L. V. Ozment to the Fifth Councilor District Professional Relations Committee.
13. Appointed Dr. Ellis to a Professional Advisory Committee to the Arkansas Association of Mental Health.
14. Decided to invite the executive secretary of the Pulaski County Medical Society to future meetings of the Council.

The Council of the Society met on December 6th at the Arkansas Children's Colony. Dr. Neil Stone, administrator, and members of his staff review the work of the colony. The following items of business were considered by the Society.

1. The Council granted approval of the use of the facilities of the headquarters office for mailing regarding an Arkansas Breakfast at the June AMA meeting in New York City in 1965.
2. Took the following action on items regarding legislation to be considered by the 1965 Legislature:
 a. Approved minor changes in the Arkansas Medical Practices Act;
 b. Voted to withhold endorsement of a proposed motor vehicle safety inspection law;
 c. Went on record in support of the proposed "Child Abuse Law";
 d. Voted to oppose the proposal for compulsory PKU testing of all newborns, recommended that matter be left to local medical society and hospital staffs for handling on a local voluntary basis.
 e. Agreed to confer with State Welfare Department on operation of Kerr-Mills.
3. Voted to give its approval to the Arkansas Chapter of the Arthritis Foundation.
4. The Council heard a discussion regarding autopsies performed in hospitals for non-accident cases and it was generally agreed that an attempt should be made to get an appropriation for the Medical Examiners Bill passed several years ago.
5. Voted to meeting January 24th at the Medical Center in Little Rock.

The Council met on January 24th and transacted business as follows:

1. Authorized the Executive Committee to negotiate a renewal of the Military Dependents' Medical Care contract.
2. Voted to offer the Society's approval and cooperation to the State Health Department in a study on Blastomycosis in Arkansas.
3. Voted to go on record as disapproving the use of chicken litter or manure on playgrounds due to the danger of histoplasmosis.
4. Nominated Dr. Martin Eisele and Dr. Jean Gladden to succeed themselves on the Board of Trustees of the Medical Education Foundation for Arkansas.
5. Authorized travel expenses for Mr. Warren to attend a Medico-Legal meeting in Las Vegas in March.
6. Voted to nominate Dr. Jack Kennedy for membership on the following AMA Committees: Committee on Medical Aspects of Sports; Council on Mental Health; Council on Occupational Health.
7. Directed the Executive Secretary to investigate the relative cost of microfilming the old bound volumes of medical journals in the Headquarters office or of purchasing a fire-proof vault for the safe storage of these irreplaceable books.
8. Voted to approve the AMA's new educational campaign and authorized the withdrawal of funds not to exceed $3,052 from the Society's reserves to match AMA's allotment to Arkansas for the campaign.
9. Appointed a committee composed of Dr. Ellis, Dr. Shuffield, and Dr. Wortham to work with the Medical Center toward restoring the Medical Center's Budget request.
10. Voted to instruct the chairman to appoint a committee of three from the Arkansas Medical Society to meet with representatives of labor and management and Blue Cross-Blue Shield to try to correct provisions of a group coverage contract which apparently discriminates against some physicians.
11. Mr. Butler, Executive Director, and Dr. Koenig, Chairman of Professional Representatives of the Board of Trustees of Blue Cross-Blue Shield, extended an invitation to the president, president-elect, and executive secretary of the Arkansas Medical Society to attend all future board meetings of Blue Cross-Blue Shield.
12. The chairman of the insurance committee reported that a decision had been reached on a dispute between a member of the Society and Blue Cross-Blue Shield on a claim filed by a physician. The insurance committee was requested to assume the job of the adjudication of such disputes until a permanent committee could be appointed. The Chairman of the Council was requested to appoint such a committee.
13. Authorized the Insurance Committee to work with Blue Cross-Blue Shield on the content of a film on ways to lower the cost of medical care, and approved the idea in principle.
14. Voted approval of proposed legislation dealing with moving traffic violations.
15. Voted to receive as information a letter from the president of the Woman's Auxiliary to the Arkansas Medical Society suggesting a "team approach" for man and wife membership to the Medical Society and Auxiliary.
16. Designated all those who attended the speakers clinic as regular members of the Speakers Bureau.
17. Voted to accept an invitation to meet at Lake Catherine again sometime after March 15th.

MINUTES OF SPECIAL MEETING OF THE HOUSE OF DELEGATES

December 6, 1964, Conway, Arkansas
Arkansas Children's Colony

The House of Delegates of the Arkansas Medical Society met in special session at 2:00 p.m. on Sunday, December 6, 1964, at the Arkansas Children's Colony, Conway, Arkansas.

The following members of the House and guests were present:

DELEGATES: BAXTER, John F. Guenthner; BOONE, Henry V. Kirby; CLARK, Eli Gary, CLEBURNE, James C. Barnett; CRITTENDEN, David Pontius; DESHA, J. H. Hellums; DREW, A. K. Busby; GARLAND, DuBose Murray; INDEPENDENCE, J. M. Robinette, Chaney W. Taylor; LITTLE RIVER, James D. Armstrong; PULASKI, David Cheairs, W. S. Lewis, Edgar Easley, Julian Foster, T. Duel Brown, Guy Farris; SCOTT, H. B. Wright; SEBASTIAN, Louise Henry, Murphey Henry; UNION, W.

M. Stevens, K. R. Duzan; WASHINGTON, Thomas Gray, James Mashburn.

SOCIETY OFFICERS: President Ellis, President-elect Hyatt, First Vice President Burrow, Secretary Shuffield, Treasurer Saltzman, Speaker Price. COUNCILORS Ledbetter, Gray, Edwards, Bell, Millar, Thomas, Townsend, Burton, Wood, Norton, Kolb, Fowler. PAST PRESIDENTS Snodgrass, Kolb, Monfort, Verser, Johnston. OTHERS: George Mitchell, John Herron, Mr. Lawrence Blackwell, Mr. Eugene Warren, Mr. A. M. Edwards, Mr. Paul Harris, Mr. Storm Whaley, Mr. Schaefer, and Miss Richmond.

Speaker Price called the meeting to order. After invocation, Speaker Price explained that roll call was not required.

Speaker Price announced that the Council had recommended that the place of the 1966 Annual Session be changed to Hot Springs. Upon motion of Kolb and Wood, the House voted to hold the meeting in Hot Springs.

Speaker Price then called on the Society's Legislative Committee Chairman, Dr. Elvin Shuffield, who explained that the principal purpose of the meeting was to decide on policy positions on matters to come before the 1965 Legislature. He introduced the Society's legislative liaison, Mr. Lawrence Blackwell, who will work with the 1965 Legislature on behalf of the Society.

Mr. Storm Whaley, Vice President for Health Sciences, University of Arkansas Medical Center, spoke regarding the Center's budget proposal for the next biennium. President Ellis made brief comments on necessity for considering Medical Center hospital as a teaching facility rather than as a charity hospital. Councilor from Eighth District, Dr. Joe Norton, moved that House approve Medical Center's appropriation request and that an Arkansas Medical Society committee be appointed to work with Medical Center officials to draw up a plan for getting Legislators and Commission members to work for approval of budget proposal. Seconded by James Kolb. Motion carried.

The Society's Legal Counsel, Mr. Eugene Warren, discussed proposed amendments to the Arkansas Medical Practices Act involving revocation of license for aiding and abetting the practice of medicine without a license and modifying provision for revocation of licensure for narcotic conviction so as to make it detailed enough to give the Narcotics Board sufficient evidence for action. Upon motion of Kolb and Mashburn, the House approved the proposed amendments.

Dr. John Herron, State Health Officer, discussed proposed changes in Narcotics Act. Some proposed changes would:

(1) add to prohibitions the "illegal purchase of drugs" (making person purchasing drugs illegally as guilty as person dispensing them illegally)

(2) Remove from the exemption list a drug no longer on Federal Narcotics Bureau exemption list

(3) (a) Would increase penalty for violation of narcotics laws

(b) Not allow judge to suspend sentence in conviction of first offense (Dr. Herron does not approve of these proposed changes in 3 (a) and (b))

(4) Make treatment compulsory for narcotic addiction cases

Upon motion of Ledbetter and Easley, the House voted to support Dr. Herron in his position concerning the proposed changes, thereby disagreeing with the proposal regarding increased penalties and suspension of sentences.

Dr. Shuffield discussed a request from the Governor's Advisory Committee on Mental Retardation that we support their proposal for compulsory P.K.U. tests on all newborns. The Council had considered and recommended opposition to compulsory provision, feeling that it should be approached on a voluntary basis by local medical societies and physicians. Upon motion of Burton and Mashburn, the House approved the Council recommendation.

Dr. Shuffield discussed the Child Abuse Law which will be proposed. The proposal will require all physicians to report suspected cases of child battery and provides immunity from public liability suits. House voted in favor of the proposal.

Dr. Shuffield discussed the proposed Motor Vehicle Inspection Law. Upon motion of James Kolb, the House voted to take no action on this proposed legislation.

Dr. Shuffield stated that he understood that a Traffic Safety Law would be proposed but that he had not seen a copy of the proposed legislation and did not know all of its provisions. It is expected that the proposal will include: (1) a point system for revocation of licensure; (2) establishment of a central registry of traffic violations; (3) provision for anonymous board of physicians to pass on ability of physically handicapped to qualify for drivers' licenses. Upon motion of Edwards, seconded by Ellis, the House voted to request the Legislative Committee to study the proposal when it is available and see what they can do with it.

Dr. Shuffield reported on a conversation with Mr. Phillips of the Welfare Department concerning operation of the Kerr-Mills Program in Arkansas. It was generally agreed that the Society should continue to work for liberalization and implementation of the program and for an increase in the appropriation for it.

Dr. Shuffield discussed State Medical Examiner bill passed several years ago. It was brought out that funds have never been appropriated to put law into effect. It was generally agreed that an attempt should be made to get an appropriation for this.

Dr. Shuffield thanked those present for attending and urged them to report back to their local groups on actions of House and necessity for local support of Society's stand on various proposals. Meetings with local legislators were suggested.

Dr. Shuffield announced that the medical consultation room at the Legislature would be maintained by the Society again this session. The membership of the Society will be polled by the Headquarters office regarding their willingness to serve and availability date.

Mr. A. M. Edwards, AMA Field Service Division representative, was introduced. He and Dr. Joe Verser, chairman of the National Legislative Committee, made brief comments concerning national legislation.

Speaker Price thanked Dr. Stone and Colony staff for excellent lunch and arrangements for meeting.

House adjourned at 4:00 p.m.

Approved: J. P. Price, M. D., Speaker, House of Delegates

MEDICINE IN THE NEWS

Residency Training in Pediatrics at Scott and White Memorial Hospital

The Scott and White Memorial Hospital and Scott, Sherwood and Brindley Foundation at Temple, Texas, has recently been approved by the AMA to conduct residency training in pediatrics. The program will be two years in length.

Medical Student Finances, 1962-64

This datagram presents a few highlights from two recent studies of medical student finances. The first study analyzed non-refundable grants (scholarships, grants-in-aid, and tuition remissions) awarded by U. S. medical schools to their medical students during 1962-63. Conducted by the AAMC Group on Student Affairs (GSA), this project resulted in detailed financial aid information from 100 per cent of the 86 established U.S. medical schools.

The second study surveyed the finances of all medical students enrolled in U.S. medical schools during 1963-64. This survey, conducted under the joint auspices of the U.S. Public Health Service and the AAMC, obtained detailed questionnaire data from 23,400 students in 87 medical schools or a 74 per cent sample of all 1963-64 enrollees.

Among the more striking findings of the first study was the wide discrepancy between the average non-refundable grants available to medical students in comparison to the non-refundable aid (fellowships, scholarships, research assistantships, and teaching assistantships) available to arts and science graduate students. Only 17 per cent of all medical students enrolled during 1962-63 received non-refundable grants and these grants averaged only $585 per recipient. In contrast, 68 per cent of all arts and science graduate students receivd an average of $2,450 in non-refundable aid and 81 per cent of the life science graduate students alone received an average of $2,700 in such aid. Thus, although some service may be required of the recipients of graduate assistantships, the problem of financing a higher education obviously poses a greater problem for the average medical student than for the average graduate student.

The USPHS-AAMC study indicated that the expenses for medical students enrolled in U.S. schools during 1963-64 averaged from approximately $2,700 for single students to around $5,200 for married students who had more than one child.

Single students received 80 per cent of their income from their own earnings or from their families. Non-refundable grants accounted for only eight per cent of their income. Married students who had no children received 90 per cent of their income from their spouses' earnings, their own earnings, and their families. Only four per cent of their income came from non-refundable grants.

During 1963-64 the percentage of medical students who were married ranged from 21 per cent in the first-year class to 60 per cent in the fourth-year class. Of all medical students who were enrolled during 1963-64, 40 per cent were married. Of these married students, 40 per cent had one or more children.

THE MONTH IN WASHINGTON

President Johnson has asked Congress to approve a far-reaching program of diagnosis, treat-

ment and stepped-up research on heart disease, cancer, stroke, and "other major diseases."

In a health message to Congress, the president also urged speedy passage of a social security health plan for aged persons.

The outline of his wide-ranging program was the president's first message on legislation sent to the new Congress. He sent it to Capitol Hill on the fifth day of the new session.

Johnson requested in addition to "Medicare":

—An increase in federal funds for maternal and child health and crippled children's services and broadening of public assistance programs so federal money could be used to pay medical and dental costs for children of needy families.

—Approval of a five-year program of grants to help start community mental health centers to offer comprehensive services.

—A step-up in the program to rehabilitate disabled persons so 145,000 could be restored to useful work each year.

—Establishment under a five-year program of multi-purpose regional medical complexes for diagnosis and treatment of heart disease, cancer, stroke and other major diseases. This proposal envisions a network of 32 centers coordinating efforts of medical schools, hospitals and community facilities costing an estimated $1.2 billion.

—Federal funds to improve services for the mentally retarded, increase hospital modernization and start a new program of loans and guarantees for loans to help voluntary associations build group medical practice centers.

—New legislation to help medical and dental schools cover basic operating costs with federal funds.

—Federal scholarships for medical and dental students.

—Extension for five years after mid-1966 of federal health research programs with a greater emphasis on specialized research of a national or regional nature.

—Laws to bring the production and distribution of so-called "goof-ball" pills — barbiturates, amphetamines and other psychotoxic drugs—under tighter control and legislation to require adequate labelling of hazardous substances and safety regulation of cosmetics and therapeutic devices by the Food and Drug Administration.

Prior to the health message, Sen. Clinton P. Anderson (D., N.M.) and Rep. Cecil R. King (D., Calif.) already had introduced medicare legislation to carry out the President's program. It was S-1 in the Senate and HR-1 in the House. It was a modified version of the King-Anderson bill which died in a joint House-Senate conference committee last year after the Senate had voted 49-44 to add it to a House measure increasing social security cash benefits.

The new King-Anderson bill calls for bringing self-employed physicians under social security coverage. It also would increase social security cash benefits by seven per cent. In a benefit period, all persons 65 years or older would be eligible under the health care plan for 60 days of hospitalization with the patient paying for the first day and 60 days of post-hospital care in a nursing home. Generally, 90 days would have to intervene between benefit periods. Aged persons also would be eligible for up to 240 days a year of home health services, such as a visiting nurse, and certain outpatient diagnostic services with the patient paying a monthly deductible. Nursing home benefits would start January 1, 1967, and the other benefits July 1, 1966.

Social security taxes would be increased by .3% next year, .38% in 1967-68 and .45% in 1969 and following years on employees and employers for a separate fund to finance the program. The tax base also would be increased to $5,600.

The program would be administered through social security by the secretary of Health, Education and Welfare. Hospitals could elect to be represented by a private organization, such as Blue Cross, to negotiate their contracts. The secretary would also delegate to such organization the functions of receiving payments from the social security program. Payments would be made to hospitals and other providers of services on a cost basis. The cost of hospital services would be based on semi-private accommodations (2, 3, or 4-bed rooms).

The bill also would authorize creation of an association of private insurance carriers to sell, on a nonprofit basis, approved policies covering health costs not covered under the social security plan. Participating carriers would be exempt from anti-trust laws.

Administration officials said Johnson's health proposals, other than medicare, would cost $262 million in the year starting next July and more than $800 million in the following 12 months.

Officials said the entire package, including the five-year program to establish regional medical centers to combat heart disease, cancer and stroke, would cost several billion dollars spread over this decade.

This plan for helping with the medical bills of needy children would be similar to the existing Kerr-Mills program for helping needy aged persons pay medical expenses. Aides said $100 million would be earmarked for the first year of the new program and $250 million in the following year.

* * *

President Johnson started his four-year term in the White House in excellent health and physically able to withstand the stresses and strains of the office "in outstanding fashion," according to his physician.

Rear Adm. George G. Burkley, White House physician, made the favorable report on the President's health in the form of 35 answers to questions submitted by newsmen.

He said he keeps a close eye on the President daily and gives him a general examination every seven to 10 days.

Burkley said Johnson, who had a kidney stone removed in 1955, cut down on his calcium intake by drinking less milk after a slight recurrence of kidney trouble in 1963. "There has been no kidney trouble since mid-1963," Burkley reported.

Burkley attributed the President's ability to carry on a rigorous routine, despite his 56 years and 1955 coronary thrombosis, to "complete recovery with excellent general physical fitness and ability to relax on short notice."

The doctor reported that Johnson has a daily supervised health routine at the White House "augmented by walking and at times swimming." He added that "a supervised exercise program is done in his bedroom."

Johnson normally retires around midnight, Burkley said, and his normal bedtime is "infrequently" put off because of work. He said Johnson gets seven to eight hours sleep and that he sleeps well. He usually awakens between 7 and 8 a.m., and later takes a daytime nap. He occasionally "does some work" in bed.

Johnson is on "no special diet" and likes a highball before dinner. He has not smoked since his 1955 heart attack. His weight has been between 205 and 210 pounds, but Burkley — like other physicians who have examined Johnson—would like him to keep his weight "in the 200 pound area."

* * *

With about 30 of the largest U.S. cities experiencing syphilis epidemics, health authorities are expressing more and more concern about a resurgence in venereal diseases.

Some experts in the field believed 10 years ago that venereal disease would be wiped out by this time through treatment with penicillin and other so-called "wonder drugs."

But it has not worked out that way. Why? Pointing to sharp increases in venereal disease among teen-agers, some say a general decline in the morals of the nation's youth is a major factor. Other reasons given by public health officials include:

—Steadily increasing urbanization of the population — the movement to the big cities, where venereal disease rates have always run highest.

—Increased mobility of the population, such as in migrant labor groups, and the increased use of the airplane and automobile—permitting the diseases to spread much faster.

—False feelings of security against the threat of venereal disease following introduction of the "wonder drugs." But many people don't make use of the cure after they have had exposure, especially in the case of syphilis, where early symptoms may pass unnoticed.

Public Health Service venereal disease experts say the upsurge in both syphilis and gonorrhea "is not confined to any race, sex, socio-economic group, or geographic area" but has occurred generally throughout the nation.

THINGS TO COME



7th Annual Meeting of South Central Association of Blood Banks

The 7th annual meeting of the South Central Association of Blood Banks will be held in March, 1965, (18th, 19th, and 20th) at the Villa Capri Motel in Austin, Texas.

Seminar in Diseases of the Nervous System

A one day seminar in diseases of the nervous system, clinical and pathological considerations, is scheduled for April 3, 1965, at St. Louis, Missouri. It is sponsored by The Missouri Society of Pathologists.



PERSONAL AND NEWS ITEMS

Dr. Marvin Associate Dean

Dr. Horace N. Marvin, former professor and head of the department of anatomy at the University of Arkansas Medical Center, is the new associate dean of the School of Medicine. Dr. Marvin succeeded Dr. John T. Riggin, who asked to be assigned to full-time clinical teaching and treatment duties.

Dr. Lee Joins Dr. Johnston

Dr. Thomas G. Johnston of Little Rock has announced that Dr. Fred Lee has joined him in the diagnosis and treatment of allergic diseases at 5512 West Markham.

Dr. Smith Elected Chairman

Dr. Purcell Smith, Jr., of Little Rock, has been elected Chairman of the Section on Allergy of the Southern Medical Association for 1965.

Dr. Johnston Receives Award

Dr. O. J. T. Johnston of Batesville was honored in December when the Kiwanis Club presented him its annual Kiwanis Citizenship Award. Dr. Johnston is 81 years of age and has practiced medicine for 57 years. He is a past president of the Kiwanis Club, county and state medical societies, member of Fifty Year Club of Arkansas Medical Society, Veteran of World War I, past president of White River Shrine Club, and is presently serving as president of Scottish Rite Masons. He is on the Board of Trustees of First Methodist Church, has served as county health officer and as physician for the county nursing home.

Dr. Saltzman Elected Chamber President

Dr. Ben N. Saltzman has been elected president of the Mountain Home Chamber of Commerce. Dr. Saltzman has served twice before as Chamber president. He is currently serving on the Board of Directors of the National Tuberculosis Association and is a member of the Governor's Advisory Commission on Mental Retardation in Arkansas.

Dr. Robinette Moves to Jonesboro

Dr. J. M. Robinette has opened his offices for the practice of medicine and surgery at 134 West Main in Jonesboro. He practiced formerly in Newark, Arkansas.

Dr. Payton Kolb Travels Abroad

Dr. W. Payton Kolb, traveling under the auspices of Religious Heritage of America, went to Lamberene, Africa, for an observance of Dr. Albert Schweitzer's 90th birthday. Enroute, the Heritage group made numerous stops in Europe and African cities, sightseeing and studying the problems of Africa.

Dr. Stuckey Serving in India

Dr. James Stuckey, a Little Rock plastic surgeon, is on an extensive trip abroad, including six weeks at Christian Medical College at Vellore, India, teaching general surgeons in plastic reconstructive surgery. He will be working under the auspices of the U. S. Department of Health, Education and Welfare and the Society of Plastic and Reconstructive Surgery. Dr. Stuckey will spend two weeks on a tiger hunting trip before returning to Little Rock. Enroute to India, he stopped at Paris, Istanbul, Beirut and Jerusalem. He will return to Little Rock in March.

St. Vincents Honors Dr. Mahoney

Dr. Paul Mahoney was honored by the hospital staff of St. Vincents at its annual dinner in December. Dr. Mahoney was the first physician to be designated "honorary staff member" by the hospital.

Doctors Serve as Boy Scout Officers

Dr. Joe Rushton of Magnolia will again head the activities of over 5,000 scouts in South Arkansas in 1965. Dr. H. W. Thomas of Dermott was re-elected vice president of the regional group.

Another Undefeated Football Team

The December 21st issue of the Arkansas Gazette carried a photograph of the undefeated Ouachita Tigers of 1914. A member of "Carter's Team" with a record of 291 points "for" and only 15 "against" was Billy Brooksher—now Dr. W. R. Brooksher, a radiologist of Fort Smith, secretary emeritus and past president of the Arkansas Medical Society.

Dr. Landrum Addresses Auxiliary

Dr. Samuel Landrum addressed the Sebastian County Medical Society Auxiliary on the subject "Religion and Medicine" in January.

Fires Damage Doctors Offices

A pre-dawn fire on December 17th, destroyed the office of Dr. A. C. Linton in Hector. On December 30th, a frame house in Little Rock housing offices of Dr. A. D. Hall was extensively damaged by a fire that apparently was preceded by an explosion. There was no one in the building at the time of the fire.

Dr. Hyder Speaks to Lions Club

Dr. Harold Hyder, medical doctor with ARAMCO in Saudi Arabia, spoke to the Cabot Lions Club in January. He discussed the country of Saudi Arabia, the people, its customs, and his work there. He is a graduate of the University of Arkansas School of Medicine and practiced medicine in Morrilton for several years before going with ARAMCO.

Two New Doctors for Des Arc

Dr. Bobby Bethell of Des Arc and Dr. Williard Burke, a native of Monticello, have announced plans to begin the practice of medicine in Des Arc in July.

Dr. Rainwater Guest Speaker

Dr. W. S. Rainwater of El Dorado was the guest speaker at the meeting of the Civinettes in El Dorado in January. He discussed "Modern Methods of Medicine".

Medical Assistant of Year Named

Mrs. Edith Crane, medical assistant to Dr. Millard Black, was chosen "Medical Assistant of the Year" by members of the Pulaski County Medical Assistants Society in December. She received a silver trophy in recognition of her outstanding services.

Dr. Wynne Named to Council

Dr. George French Wynne of Warren has been named to a five-year term on the council of the Southern Medical Association. Dr. Wynne's appointment was announced early in January by Dr. R. H. Kampmeier of Nashville, Tennessee, president of the 17,000 member organization. The Association's Council includes one member from each of the sixteen states and the District of Columbia represented in the organization.

Dr. Strickland Begins Practice in Gould

Dr. Luther J. Strickland began practicing medicine at the Gould Medical Clinic in Gould in January. He is a native of Oklahoma and received his M.D. degree from the University of Oklahoma School of Medicine. He completed a rotating internship at the Arkansas Baptist Hospital in Little Rock. He was formerly practicing in England.

Dr. Wheat Speaker at Church

Dr. Ed Wheat of Springdale was the speaker at the regular service at Presley Chapel Methodist Church in Huntsville on January 10th.

Dr. Kahn Re-Elected

Dr. Alfred Kahn, Jr., of Little Rock has been re-elected president of the Little Rock Boys' Club and its various units for a second term.

Drs. Bethell and Henderson Address Meeting

Dr. John Bethell of Stuttgart addressed the quarterly meeting of the Arkansas group of American Medical Technologists in December. He spoke on the subject of "Electrolyte Abnormalities". Dr. Francis Henderson, also of Stuttgart, spoke on "Practical Aids in Hematology".

Dr. Robins Accepts Post

Dr. R. B. Robins, formerly of Camden, has accepted the post of director of medical education in the Norwegian-American Hospital in Chicago.

Dr. Watson Elected President of the Neurosurgical Society of America

Dr. Robert Watson, Little Rock, neurosurgeon, was elected President of the Neurosurgical Society of America at its eighteenth annual meeting, held in San Juan, Puerto Rico, January 26-30.

Springdale Memorial

Dr. Ed Wheat has been selected chief of staff for the Springdale Memorial Hospital for 1965. Other officers are Dr. Ralph Power, vice chief of staff and Dr. R. P. Edmondson, secretary-treasurer.

Baxter General

Dr. John F. Guenthner was elected chief of staff at the Baxter General Hospital in December.

St. Vincents

St. Vincents in Little Rock will have Dr. James Headstream as chief of staff, Dr. Alfred Kahn, vice chief, and Dr. James Morrison, as secretary.

OBITUARY

Dr. Kingsley W. Cosgrove, Sr.

Dr. K. W. Cosgrove, Sr., died December 12th, 1964, at a Little Rock hospital. Born in St. Mary's, Canada, he was graduated from the University of Toronto and served in the Canadian Army in World War I. He interned and did his residency at the Henry Ford Hospital in Detroit, specializing in ophthalmology. Dr. Cosgrove came to Little Rock in 1927. He was a past associate professor of the University of Arkansas Medical School and was on the staff of the school when he died. He was also supervisory ophthalmologist for the state Welfare Department. For his work in clearing up trachoma in the South, he was honored a few years ago with an award by the University of Arkansas. For several years, he had practiced with his son (Dr. Kingsley W. Cosgrove, Jr.) at Little Rock. Dr. Cosgrove was a past president of the Kiwanis Club, a member of the American Medical Association, the Arkansas Medical Society and Pulaski County Medical Society. He was a communicant and past vestryman of Trinity Episcopal Cathedral. He was past chief of staff at the Arkansas Baptist Hospital and the Arkansas Children's Hospital. He was on the National Board for the Prevention of Blindness, on the Board of the Lighthouse for the Blind, and secretary of the Ophthalmology Section of the Southern Medical Association. He is survived by his widow, his son, two daughters and ten grandchildren.

Dr. John E. McGuire

Dr. John E. McGuire died at his home in Piggott on December 26, 1964. He was 83 years of age. Dr. McGuire came to St. Francis, Arkansas, in Clay County from Campbell, Missouri, and later moved his office to Piggott, where he took part in all types of civic affairs for the betterment of the community. He had practiced medicine in Clay County for fifty years. He was a member of the Piggott Masonic Lodge; a 32nd Degree Mason and a Shriner. He is survived by his wife, a son (Dr. Clifford McGuire), and a daughter.

Hemolytic Anemia Following Insertion of Starr-Edwards Valve Prosthesis

T. D. Stevenson (410 W 10th Ave, Columbus, Ohio) and H. J. Baker, *Lancet* 2:982 (Nov) 7 1964

Hemolytic anemia developed in two patients following insertion of a Starr-Edwards valve for correction of aortic valvular disease. The anemia was insidious in onset and characterized by the presence of numerous fragmented red blood cells (pyknocytes) in the peripheral blood. Hemolysis occurred intravascularly with hemoglobinemia and hemoglobinuria. In both patients valvular replacement was unsuccessful, since evidence of valvular insufficiency persisted following surgery. This variety of hemolytic anemia is apparently due to mechanical damage to red blood cells by turbulent blood flow and the presence of a rigid prosthesis in the circulation.



PROCEEDINGS OF SOCIETIES

Baxter

At the annual meeting of the Baxter County Medical Society, Dr. Maxwell G. Cheney was re-elected to a second term as president of the Society. Dr. Bill Snow was elected vice president and Dr. Fred Hargrove was re-elected as delegate to the Arkansas Medical Society. Dr. Ben N. Saltzman was re-elected secretary.

Independence

Dr. Chaney Taylor has been elected president of the Independence County Medical Society for 1965. Dr. John Grasse was elected vice president; Dr. Joe Farmer was elected secretary-treasurer, and Dr. J. E. Lytle was named a delegate to the state convention.

Ouachita

Dr. Tom Meek will serve as president of the Ouachita County Medical Society for 1965. Other officers are Dr. Joe Ellis, vice president, Dr. L. V. Ozment, secretary, and Dr. Bruce Ellis, delegate to the state convention, and Dr. James Guthrie, alternate delegate.

Ouachita County is one of twenty-two counties in the nation picked as pilot counties for a new self analysis and survey of health conditions. This project is sponsored by the Kellogg Foundation, the McGregor Foundation and the U. S. Public Health Service.

Craighead-Poinsett

Craighead-Poinsett County Medical Society, in cooperation with the local health department, has undertaken an effort aimed at wiping out diphtheria, whooping cough, tetanus and polio. The medical society and health department are primarily interested in seeing that children who do not have the services of a private physician are immunized.

In December, Dr. A. J. Forestiere presented checks to libraries in the two counties. The money was received from contributions made by individuals participating in oral vaccine clinics held in the two counties.

Council Minutes
December 6, 1964

Arkansas Children's Colony, Conway, Arkansas

The Council of the Arkansas Medical Society met at 11:00 a.m. on Sunday, December 6, 1964, at the Arkansas Children's Colony in Conway, Arkansas. Present were: Thomas, Ellis, Hyatt, Burrow, Shuffield, Saltzman, Ledbetter, Edwards, Gray, Bell, Millar, Townsend, Burton, Wood, Norton, Kolb, Fowler, Kahn, Monfort, J. Kolb, Johnston, Brown, Verser, Price, Snodgrass, Kenneth R. Duzan, Willis Stevens, John Herron, Edgar Easley, George Mitchell, Chaney Taylor, Mr. Warren, Mr. Blackwell, Mr. Whaley, Mr. Harris, Miss Richmond, Mr. Schaefer, Mr. Edwards, Dr. Neil Stone and members of the staff of the Colony.

Dr. Stone and members of his staff reviewed the history, organization, and work of the Colony. It was pointed out that the Colony could handle only a small percentage of the State's mentally retarded and the admission policies were explained in detail. A question and answer period followed.

At a luncheon, the Council conducted business as follows:

1. AMA Delegate James M. Kolb reported that an Arkansas breakfast is planned for the 1965 Annual Meeting of the AMA in New York, to be financed by funds already on deposit

and private contributions. He requested approval for use of facilities of Executive Secretary's office for mailing letters regarding the breakfast. Upon motion of Fowler and Edwards, the Council voted to authorize the headquarters to send out notices and invitations regarding the breakfast.

II. Chairman Thomas called on Dr. Elvin Shuffield, chairman of the Legislative Committee, for a discussion of matters which will probably come before the 1965 General Assembly of the Arkansas Legislature.

A. Dr. Shuffield and Mr. Warren discussed proposed changes in the Medical Practices Act, one providing for revocation of license for aiding and abetting the practice of medicine without a license and one modifying the paragraph on narcotics to make it more explicit.

B. Dr. Shuffield and Dr. Herron spoke briefly on proposed changes in the Narcotic Act.

C. Dr. Shuffield stated that the Society had been requested to aid in support of a proposed motor vehicle safety inspect law. Upon motion of Ledbetter and Saltzman, the Council voted to withhold endorsement of the proposal.

D. Dr. Shuffield and Mr. Warren discussed the proposed "Child Abuse Law" which requires physicians to report suspected cases of child battery and gives them immunity from public liability suits. Upon motion of Edwards and Saltzman, the Council voted to go on record in support of this proposed legislation.

E. Dr. Shuffield discussed a request from the Governor's Advisory Committee on Mental Retardation that we support their proposal for compulsory P.K.U. tests on all newborns. Upon motion of Fowler and Townsend, the Council voted to oppose the proposal for compulsory testing but to recommend to county medical societies and local hospital staffs that the testing be done on a voluntary basis.

F. Dr. Shuffield discussed a proposal for legislation regulating drivers' licenses. The Council took no action on the proposal inasmuch as it was not known exactly how the bill would be worded.

G. Dr. Shuffield also stated that it was his understanding that a Mental Health Bill would be proposed but that he had not seen a copy of it. Therefore, no action was requested of the Council on this matter.

H. Dr. Shuffield briefly mentioned the Welfare Department's budget and prospects for operation of Kerr-Mills. Dr. Ellis suggested a conference with Mr. Phillips of the Welfare Department on what they could or would do with Kerr-Mills.

III. Dr. Ellis discussed the request for approval of the Arthritis Foundation, which had been referred to the Executive Committee for study and recommendation. He stated that it was important to the Foundation that final action be taken by the Society as soon as possible because of an application for a grant which the Foundation is making. Upon motion of Fowler and Edwards, the Council voted to give its approval to the Arkansas Chapter of the Arthritis Foundation.

IV. Dr. Shuffield mentioned that the Society would again man the first aid room at the Legislature. The headquarters office will poll the membership for volunteers to serve one day.

V. Mr. Storm Whaley, University of Arkansas Vice President for Health Sciences, briefly discussed the Medical Center's budget request for the next biennium.

VI. Dr. Bell discussed a problem concerning autopsies performed in hospitals for non-accident cases. Dr. Shuffield and Mr. Warren discussed the Medical Examiners Bill passed several years ago and pointed out that there had never been an appropriation to cover it. The Council generally agreed that an attempt should be made to get an appropriation for the Act.

VII. Upon motion of Ellis, the Council voted to meet January 24th at the Medical Center in Little Rock.

The Council meeting adjourned at 1:50 p.m.

Approved:
H. W. Thomas, M.D.
Chairman of the Council



BOOK REVIEWS

SCINTILLATION SCANNING IN CLINICAL MEDICINE, edited by James L. Quinn, III, M.D. pp. 278, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1964.

This is an excellent brief survey of a new field to most physicians other than radiologists. It is well written by a group of prominent contributors. It explains the principles of scanning organs for evidences of space-occupying lesions, lack of circulation, etc. There are chapters pertaining to the thyroid, parathyroid, bony skeleton, pancreas, heart, lung, spleen, liver, and neoplasm localization. The book is well illustrated and is, all in all, a most interesting brief resume of this subject. It is recommended to medical students and all practicing physicians other than radiologists.

AK

BRAIN-THYROID RELATIONSHIPS, Ciba Foundation Study Group No. 18, edited by Margaret P. Cameron, M.A. and Maeve O'Connor, B.A., pp. 117, illustrated, published by Little, Brown and Company, Boston, 1964.

This is a fascinating small book which discusses the affect of the relationship between the thyroid and the brain. Among other things it discusses is the control of the thyrotropin hormone by the hypothalamic area. The factors which cause the release of thyrotropin are discussed. In clinical medicine one continuously speaks of thyrotropin but in research areas a great deal of thought has been spent on trying to unravel why the thyrotropin hormone is released. This is mediated through the brain and seems to result, among other things, from temporary changes. Of interest is the discussion of the necessity of the thyroid for normal brain development. The thyroid hormone seems to be necessary during the fetal development and, even if thyroid replacement is given after birth, there seems to be some loss of normal development. This is an interesting short book.

AK

Ciba Foundation Colloquia on Endocrinology, Volume 15, AETIOLOGY OF DIABETES MELLITUS AND ITS COMPLICATIONS, edited by Margaret P. Cameron, M.A. and Maeve O'Connor, B.A., pp. 405, illustrated, published by Little, Brown and Company, Boston, 1964.

Of all the symposia published under the auspices of the Ciba Foundation probably this one concerning the aetiology of diabetes mellitus and its complications is the most important and most interesting. There is no branch of medicine which is not concerned in some way or another with diabetes mellitus. This includes the surgical specialties, obstetric specialty, etc. Despite long and intensive study, there are many facets of the diabetic problem as yet unanswered. This symposium represents the newest thinking on the aetiology of diabetes and is a thoroughly fascinating book. It is highly recommended to all internists. It will certainly make interesting reading to general physicians and specialists in other fields. AK

ANSWER—What's Your Diagnosis?

DIAGNOSIS: Congenital syphilis

X-RAY FINDINGS: There is extensive periosteal calcification along the shafts of the long bones. Areas of localized osteomyelitis are noted in the upper shafts of the humeri involving both the cortex and the medullary canal. The upper portion of the right humerus is fractured through the area of osteomyelitis. Band-like areas of decreased density are seen in the metaphyses of the radius and ulna bilaterally.

ANSWER—Electrocardiogram of the Month

INTERPRETATION:

Rate: 145 Rhythm: Ventricular Tachycardia

PR: — QRS: Approx. .20 QT: .38

ABNORMAL. Very little evidence of atrial activity and regular, wide, bizarre QRS indicates ventricular pacemaker. T waves still remain peaked. Severe hyperkalemia.

COMMENT: This tracing represents changes found in usually pre-terminal conditions with marked elevation of potassium.

TUBERCULOSIS  ABSTRACTS

Sponsored by Arkansas Tuberculosis Association

HEPATIC HYDROTHORAX

In a study of a patient with hepatic cirrhosis and pleural effusion, passage of fluid from the peritoneal to the pleural space was traced with serum albumin tagged with I^{131}. The diaphragmatic lymphatics appeared to be the route. Twelve other cases are also discussed.

ROBERT F. JOHNSTON, M.D., and RODOLFO V. LOO, M.D.;
Annals of Internal Medicine, September, 1964.

The association of hydrothroax with hepatic cirrhosis has been recognized for many years. There is little doubt that hydrothorax can occur with cirrhosis in the absence of manifest chest disease. In most cases reported, ascites was also present. It has been postulated that the transport of ascitic fluid through th elmphatics into the pleural space accounts for at least some of the hydrothorax.

After a detailed study of a case of hepatic hydrothorax, the charts of 200 consecutive cases of hepatic cirrhosis were studied to find the cases with pleural effusion. Twelve, or 6 per cent, were considered to have hepatic hydrothorax when other causes of pleural effusion could be reasonably excluded. The effusion occurred on the right side in 8, bilaterally in 2, and on the left side in 2.

SPECIAL STUDIES ON CASE 1

Analysis of the peritoneal and pleural fluids in Case 1 showed that they were similar in most respects. Both met the criteria for transudates, with total protein less than 3 grams per 100 milliliters. The total protein was slightly higher in the pleural fluid due to a larger albumin fraction.

Smears prepared from pleural fluid after intraperitoneal injection of India ink showed macrophages containing many carbon particles. Such particles could not be seen in smears of blood obtained at the same time. After intrapleural injection of the ink, there was no comparable increase in carbon particles in the peritoneal fluid macrophages. Samples of peritoneal fluid obtained before and after the intrapleural ink injection had the same optical densities, supporting the impression that no transfer of carbon took place.

RADIOACTIVITY MEASURED

When radioiodinated serum albumin was injected intravenously in Case 1, radioactivity appeared more rapidly and in greater concentration in peritoneal fluid than in pleural fluid. When similar material was injected intraperitoneally, radioactivity appeared in the pleural fluid and plasma at about the same time and in the same concentration. At 25 hours, the radioactivity per gram of albumin in plasma and pleural fluid was nearly identical, in contrast to results of intravenous study, where at 25 hours the plasma radioactivity per gram of albumin was nearly five times that of pleural fluid. These results suggest that radioactive iodine-tagged albumin was entering the right pleural space directly from the peritoneal space.

After injection of radioiodinated serum albumin into the right pleural space, radioactivity appeared more rapidly and in higher concentration in the plasma than in the peritoneal fluid. At 25 hours, radioactivity per gram of albumin in plasma was 4.9 times that in the peritoneal fluid. This suggests that radioactivity was transported to the peritoneal space via plasma, and there was no direct passage of tagged albumin from the pleural to the peritoneal space.

The source of chest fluid found in association with cirrhosis is unknown. It has been suggested that the fluid may come from the blood stream as a result of hypoalbuminemia or hypertension in the azygous and hemiazygous systems or be secondary to ascites either by direct passage of the fluid through a diaphragmatic defect or by transport of ascitic fluid into the pleural space through the diaphragmatic lymphatics.



The Doctor's Visit, Jan Steen 1626-1679, Mauritshuis, The Hague

In Diverticulosis and Diverticulitis...

METAMUCIL® brand of psyllium hydrophilic mucilloid

"Diverticulosis ... a low-roughage diet is advisable.... Constipation is avoided, preferably by the daily use of Metamucil.

"Diverticulitis Mild, chronic symptoms of diverticulitis, such as diarrhea or flatulence also are treated[1] by low-roughage diet, adequate fluid intake and Metamucil...."

Usual Adult Dosage: One rounded teaspoonful of Metamucil (or one packet of Instant Mix Metamucil) in a glass of cool liquid one to three times daily.

Metamucil is available as Metamucil powder in containers of 4, 8 and 16 ounces and as flavored Instant Mix Metamucil in cartons containing 16 and 30 single-dose packets.

1. Welch, C. E., Diverticula of the Alimentary Tract, in Conn, H. (editor): Current Therapy—1961, Philadelphia, W. B. Saunders Company, 1961, pp. 224-225.

SEARLE

Research in the Service of Medicine

ASCITES USUALLY PRESENT

Hypoalbuminemia as a sole cause can be eliminated for there are many cirrhotic patients and persons with malabsorption syndromes who have low serum albumin levels but never develop hydrothorax. Of the 200 cases of cirrhosis reviewed, serum albumin levels were obtained in 179. There was a significant difference between the mean serum albumin levels for those cirrhotic patients without ascites and the two other groups composed of patients with ascites alone and with both ascites and hydrothorax. There was no significant difference between the groups with just ascites and the group with ascites and hydrothorax.

Although it seems clear that hypoalbuminemia and azygous hypertension play some role in the etiology of hepatic hydrothorax, these factors alone cannot explain all cases.

The more probable explanation is that hydrothorax is derived directly from the peritoneal fluid. Ascites is present in nearly all cases of cirrhosis when hydrothorax is recognized. All 13 of the cases in this series had ascites, and though there have been reports of hepatic hydrothorax occurring in the absence of ascites, these are rare. It would appear that ascitic fluid passes into the pleural space either through a defect in the diaphragm or via the lymphatic channels that penetrate it.

Data from the present study, suggesting that hydrothorax was not formed exclusively from plasma or as the result of a diaphragmatic defect, are compatible with the theory that chest fluid is the result of transdiaphragmatic transport of ascitic fluid by the lymphatics.

If it is correct that hepatic hydrothorax is secondary to transdiaphragmatic transport of ascitic fluid in the lymphatics, the question must be answered why hydrothorax does not occur in all patients with ascites. Pleural effusion will not be manifest until the rate of formation of pleural fluid exceeds the rate of fluid absorption from the pleural space.

Even in normal man it is likely that pleural fluid is being constantly formed, but an equal rate of absorption prevents accumulation of fluid. In the presence of ascites, the rate of pleural fluid formation appears to be greater than normal. If, in addition, hypoalbuminemia is present, the rate of re-absorption of water from the pleural space will be decreased. If the rate of formation exceeds the rate of absorption, hydrothorax will occur. The probability it will occur will be increased if there are local factors such as azygous hypertension which impedes the absorption of water or obstruction or increased pressure in the thoracic lymphatics which reduces protein absorption.

Antifibrotic Therapy With Potaba

C. J. D. Zarafonetis (Simpson Memorial Institute, Ann Arbor, Mich), *Amer J Med Sci* 248:550 (Nov) 1964

Results of treatment of 135 patients with systemic sclerosis and 17 patients with localized scleroderma are reviewed. Orally administered potassium para-aminobenzoate (KPAB or Potaba) was employed for its antifibrotic effect in all of these patients. Supplemental measures in the systemic form of scleroderma include bethanechol chloride for dysphagia, small doses of reserpine for Raynaud's phenomena, physical therapy and dynamic traction splints where applicable. Attention is directed to the diminished pulmonary diffusion capacity present in three-fourths of scleroderma patients, and its association with the development of cor pulmonale and cardiac arrhythmias. KPAB appears valuable as primary therapy for Peyronie's disease. It may also be used beneficially as adjunct therapy in selected patients with chronic fibrotic ulcers of the skin and as preoperative preparation of certain patients with Dupuytren's contracture. Reference is made to a hypothesis which assigns to serotonin a major role in the pathogenesis of fibrosis.

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THE JOURNAL OF THE Arkansas MEDICAL SOCIETY

Vol. 61 No. 11

FORT SMITH, ARKANSAS

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*Lennox, W. G.: Epilepsy and Related Disorders, Boston, Little, Brown and Company, 1960, vol. 2, p. 865.

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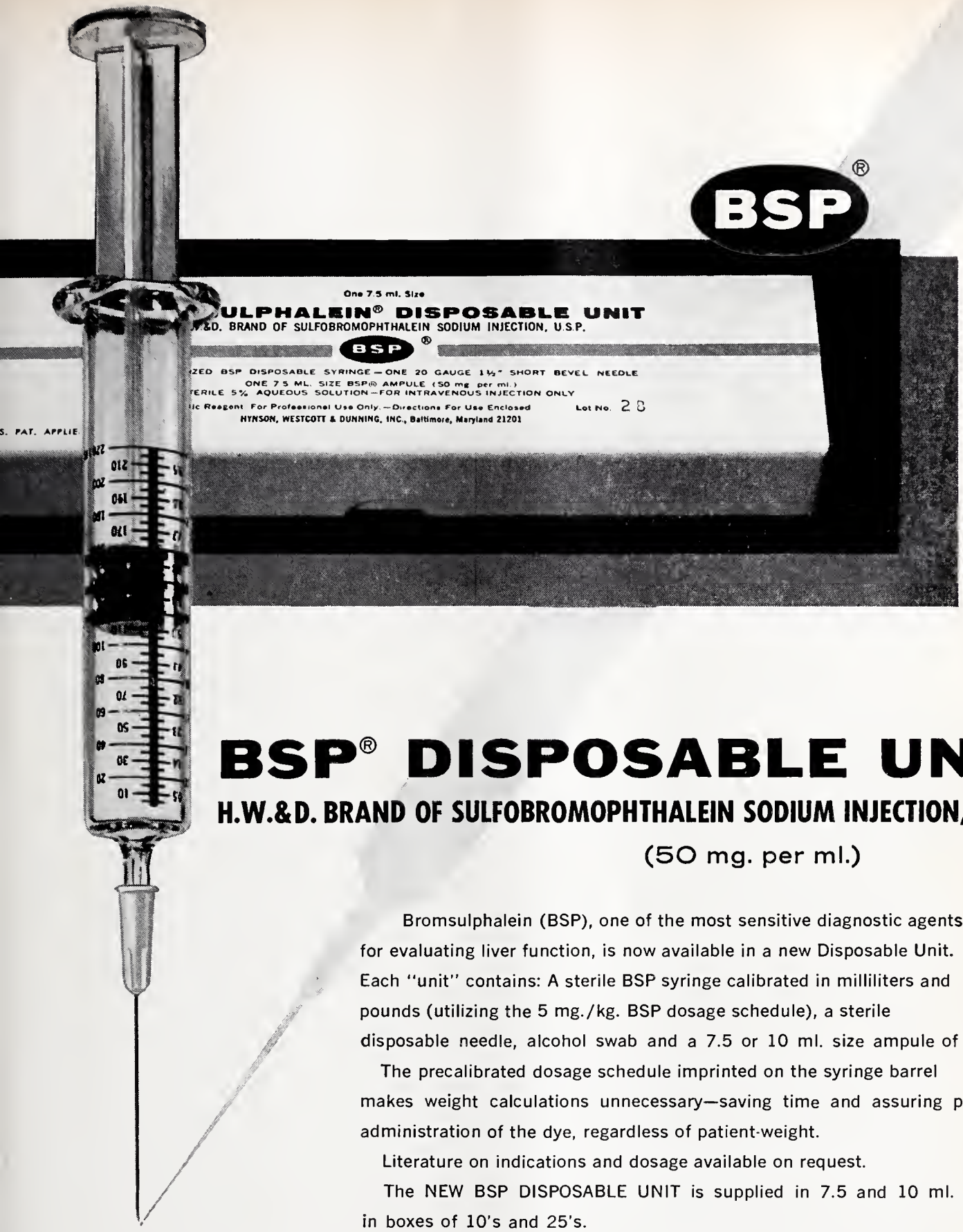
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SHALL WE LEAD OR FOLLOW?

C. Randolph Ellis, M.D.*

I. Introduction

Fellow Councilors and Members of the Arkansas Medical Society, many of us grew up in the day when the practice of medicine was simple. The physician saw his patient, prescribed medicine for him, collected his fee, and sent the patient on his way. We would love to practice medicine this way. There would be less bookkeeping; few, if any, insurance forms to fill out; and financial records would be simple.

Now you and I know that it is impossible for us to return to the way of practice I have just described. The American people today expect to pay a premium to some insurance company and get their medical expenses paid, in full—or almost in full. This requires that we fill out forms, send them to an insurance company, have them approved (we hope by a medical man but sometimes only by lay people), and receive a check from the insurance company. At times we have our methods of treatment, length of hospitalization, or our diagnosis challenged by lay people. To me it is amazing that this method of the practice of medicine runs as smoothly as it does. However, at times I have been quite angry, to put it mildly, by some secretary writing back to question my diagnosis rather than have a company physician write me.

Now, I maintain that we are forced, not by any insurance company, not by the government primarily, but by the American people, to practice medicine in about the fashion I have just described. With some modifications of this procedure, we can, in my opinion, accept this mode of the practice of medicine if we maintain at least two provisions.

1. We can accept this mode of the practice of medicine if it always gives the patient the free choice of physician and hospital. There are many ramifications of this concept, but suffice it to say that we must keep, not merely the idea, but the absolute freedom of the patient to choose his physician and hospital.

2. This mode of the practice of medicine must leave the physician free to practice medicine as he chooses, assisted and constrained only by his *own* colleagues. This rules out any questioning of diagnosis, treatment, length of hospital stay, or any other aspect of the practice of medicine by any layman. The very natural corollary to the above concept is that we must agree to teach, supervise, and regulate ourselves. We are going to be regulated by someone. In my opinion that someone must be ourselves. If one of our profession repeatedly admits patients to the hospital for minor illnesses or keeps patients hospitalized longer than necessary, a committee of our own members should investigate the problem—not an insurance company or government agency.

Now, if we are to be forced to practice medicine in our present socio-economic climate (which we *can* do without violating our ethics), shall we continue to wait for certain groups and forces to lead the way and push us into their line of thinking; or shall we take the lead in guiding, evaluating, and administering the practice of our science and art?

II. The Foundation Idea

I would like to present one method by which we, as a profession, can control the practice of medicine even in our present day social situation.

Let us examine the "Foundation Concept." There are five groups associated together in this endeavor. We shall briefly examine the activities of each group.

A. The Foundation for Medical Care is an organization set up by the medical society (usually county) for the purpose of doing the following things:

1. The Foundation sets policy standards. As many of you know, the standards in some policies today are unrealistically low. The Foundation

*1004 South Main, Malvern, Arkansas.

controls this by setting minimum standards which a policy must have before the Foundation will process claims on such a policy. The room allowance, for example, could be required to cover at least the charge for semi-private accommodations. Some policies allow only $4.00-$6.00 per day for a room.

Although the Foundation makes no attempt to set premiums, it does demand knowledge of any contemplated rate change before approval is renewed each year.

2. The Foundation receives, processes, reviews, and pays claims to doctors. You will note that this satisfies one of the conditions I stated previously. It leaves the physician free to practice medicine as he chooses, but assisted, constrained, and, if necessary, regulated by his *own* colleagues, the doctors on this review committee which checks claims before they are paid.

3. The Foundation sets maximum fees according to a schedule made out by the medical society in the area affected. In the California area, this is based on the Relative Value Study, the Unit factor varying according to the location in California and the estimated income of the group taking the policy.

4. The Foundation elects the doctor members yearly. The doctor, regardless of his degree or his specialty training, must be re-elected each year. This, in actual practice, works out to be a formality of sending in an application and getting approval; however, it puts the Foundation in a position to deny membership to a member who does not make an honest effort to live up to the standards and agreements of the Foundation.

5. The Foundation continually studies local medical economic problems. These problems and conditions change sometimes month by month, frequently year by year, and need to be studied so that some modifications may be made in the basic standards of the policies which the Foundation will approve and administer.

B. The Insurance company, of course, finances the program, it does the following:

1. It sells and negotiates the policy.
2. It collects the premiums.
3. It assumes all the risks.
4. It re-imburses the Foundation for the cost of the claims offices which the Foundation operates. It does this by giving the foundation a small percentage of the premium paid in by a group. In the plans I studied, this amount was 3% of the first $50,000 premium and 2% of the premium in excess of the $50,000.

C. The Foundation doctors practice medicine just as previously and do two things:

1. They agree to accept the Foundation fees as full payment under foundation approved policies. There are a few exceptions to this statement. If the patient refuses to assign his benefits to the physician, or, if the patient has multiple policies, the physician may charge his usual fee up to, but not to exceed, the amount received from the combined insurance.

2. The second function of the physician is merely to reapply for membership each year.

D. The medical society also just has two functions in this concept.

1. It legally controls the foundation.

2. It selects the foundation trustees. It is my understanding that sometimes the trustees of the Foundation are the same as the board of directors of the medical society.

E. What part does the patient play in this type of practice?

1. He selects the doctor of his *own* choice. This satisfies another condition mentioned earlier. If this patient chooses a physician who is not a Foundation member, the insurance company will still pay his doctor the maximum fee allowed under the contract for that procedure; however, this non-member physician is allowed to charge more, up to his usual fee.

Now, the question immediately comes to your mind "Why would a patient choose a non-member?" The answer is simple. The average patient wants to choose his *own* personal physician. If his physician is greatly "out of line" on his fee, the patient will probably inquire from his friends or from the insurance company to find a physician who accepts the fee as full payment. Please let me emphasize that, in my opinion, patients do not leave their own personally chosen physician to save only a few dollars in professional fee.

2. The patient, union, employer, or some combination of these pays the premium *directly* to the insurance company. The Foundation accepts no premiums at all.

3. The patient has certainty of coverage, usually complete coverage except for very definite exceptions. There is a deduction of five Units of X-ray or laboratory work whether as an outpatient or in-patient before the insurance will cover up to 30 Units. There is a two visit deducti-

ble on out-patient medical care. This means that with a Unit factor of 5, the patient would pay the first $25.00 on X-ray or laboratory work before the insurance would cover $150.00, whether in the hospital or out. On office visits or home visits, the patient would pay for the first two visits of each illness. In case major medical coverage is included in a contract, the patient participates by paying 20% of the professional fee after a certain total is reached. These exceptions show that the patient pays the first dollar of medical service and pays 20% of the medical fee in case of prolonged or extremely costly medical service. This would tend to discourage unnecessary *early* or unnecessary *prolonged* use of the coverage.

III. Basic Improvements Expected From This Concept

A few physicians have asked me what we have to gain from such a program.

A. The medical profession can control, gradually, the basic standards of insurance coverage. The idea will begin slowly; but, if past experience is any indicator, it will grow rapidly, more and more policies being administered by the foundation in which physicians are having a major voice in setting standards.

During the last few years, labor and management have been at the bargaining table when large group policies were agreed upon. I personally know of one case of labor setting the standards and one case of management requesting and getting a certain type contract. Why should we, the *only* suppliers of this medical care, not have a part in these conferences?

B. The medical profession can better control the practice of medicine.

1. The quality of medical care is reviewed by the claims review committee. Admittedly, this is not as exhaustive as a tissue committee or medical records committee; but, then some of these patients are not in the hospital. You will recall that near the beginning of this discussion, I stated that we will be controlled by someone. Why should that not be our own colleagues?

2. The length of hospital stay will become more uniform and give the insurance companies a more insurable item.

3. The cost to the patient can, to some extent, be controlled by:

a. Relatively uniform physician's fees.

b. A gradual shortening of hospital stay.

c. Discouraging unnecessary early or unnecessary prolonged use of coverage.

C. The patient has complete free choice of physician and hospital. The non-member physician may charge the patient more than the contract states; however, the patient can change doctors on his next illness. About 90% of physicians are members in the territory covered by these plans.

D. The physician is completely free of layman questioning or control concerning his practice of medicine. He can be questioned by his own colleagues, the review committee. In actual practice, the review committee questions about 10% at the beginning of such a program and about 2% after one year. This is probably due to education and orientation of both members and the committee. Many times, a physician is corrected in his mode of reporting so as to get the maximum benefit from the insurance.

E. Gradually more nearly standard report forms can be used. This is possible because physicians will be doing the review work.

IV. Conclusion

In my humble opinion, this Foundation Concept is workable to great advantages in many counties of Arkansas. It is workable, but it must be worked. At least a few physicians must take the responsibility of reviewing claims.

May I repeat? We must accept the change in the socio-economic aspects of medicine. Why can we not lead instead of follow? We must have our claims reviewed, and, at times, questioned by someone. Had you not rather have members of our own society do this?

I present this Foundation idea for your consideration. Please ask questions and discuss it with your mind open to the changes forced upon us.

Factors in the Epidemiology of Cancer in Arkansas

Eleanor J. Macdonald, A.B.*
Margaret Crawford Murphy, B.S.**

The epidemiology of cancer is the study of all factors and their interrelationships which affect the occurrence and course of the health and disease of the patients, including the characteristics of the host population. The objective of epidemiologists is to find the causes of the disease process and to determine the points in its natural history where interruptions may be accomplished in man's favor. To prevent or modify a disease, information about the character of the environment is required, i.e., its social, economic, biologic and physical aspects. Also, data must be obtained on the characteristics of man in relation to his environment, i.e., his personality, his habits and customs, the inherent characteristics of age, race and sex, and of his defense mechanisms. After these factors are known, the disease agent factors may be intelligently studied; these factors comprise the biologic, nutrient, physical, chemical, mechanical or psychologic conditions which contribute to disease occurrence (1).

Arkansas, one of the south central states, is ten times as large as Connecticut and has a population the size of Connecticut's 1940 population. The climate is temperate and mild. Cotton is the most important of the state's extensive agricultural resources. The mineral resources include bauxite, petroleum, coal, manganese and diamonds. The forests are extensive, and give rise to related industries that account for half the labor force of the state. Reference is made to Connecticut in 1940 (2), because in that year, the program for cancer had its active component parts similar to those now present in Arkansas and it was decided to expand the program in Connecticut to total registration of cancer to insure universal follow-up and to provide the basis for accurate incidence, prevalence and survival data, and for epidemiological research. There was an active cancer committee in the state medical society comparable to the one in Arkansas and a division of cancer research in the state department of health comparable to the cancer commission in Arkansas. Connecticut had a branch of the American Cancer Society and an association of tumor clinic staff members; it had clinics approved by the American College of Surgeons in some of its major hospitals; and it had begun a central cancer registry which contained 1,000 abstracts of microscopically proved cases from selected hospitals.

In 1945, a state cancer commission was established in Arkansas by legislative action. Its membership represents all official and non-official agencies interested in cancer. There is, in addition, a Cancer Coordinating Committee which includes representatives of the above-named groups plus representatives from the University of Arkansas Medical School, the State Hospital Association, The American College of Surgeons, the Arkansas State Board of Health and Department of Public Welfare. The Association of Tumor Clinics staff members includes basic and consultant staffs of the seven tumor clinics. This association is sponsored by the State Cancer Commission.

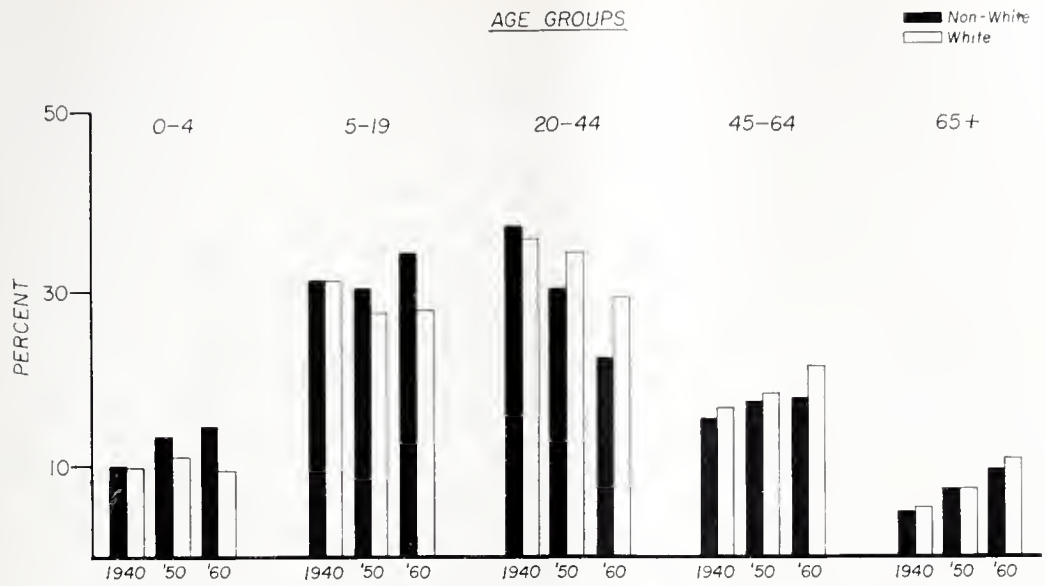
The commission is authorized to conduct cancer clinics, make studies, carry on a cancer education program and furnish medical, hospital and domiciliary care to indigent cancer patients and to others not wholly indigent but without means of providing the necessary care for themselves.

Thus, from the first, all the agencies with interest in cancer have had access to one another through membership in the policy-making units of the program. This has endowed the Arkansas cancer effort with cohesion and unity of purpose.

Arkansas is in a strategic position to make a major contribution to the epidemiology of cancer as it occurs in a homogeneous population in the south central United States, for comparison with the findings in its northeastern counterpart, Connecticut. Arkansas has fine facilities for the care and treatment of cancer. It has an active well-trained medical profession representative of all of the medical specialties, which has a demonstrated willingness to give of itself in the cause of cancer through affiliation with and guidance of all educational and research programs for cancer care and knowledge within the state. Its medical school, centrally located, has a program in basic

*Epidemiologist, **Assistant Epidemiologist, The University of Texas M. D. Anderson Hospital and Tumor Institute, Houston, Texas.

FIGURE 1



Population distribution by age, sex and color, Arkansas, 1940, 1950, 1960.

and clinical research in cancer. It is a part of the Southwest Cancer Chemotherapy Study Group of clinicians who study together laboratory advances so that they may be transmitted with no delay to the clinic.

Of great importance in validating an epidemiological study of cancer is the relative stability of the population. Although Arkansas is one of three states with a declining population, its ethnic structure remains constant enough to afford a definitive descriptive demographic unit. A fluctuating population with large portions from different ethnic backgrounds creates conditions difficult to evaluate in the analysis of data pertaining to environment and genetics. If there are two ethnic groups and they are fairly stable, then an excellent natural opportunity becomes available for studying a large number of factors in two groups with different characteristics. This is the situation in Arkansas.

Of the Arkansas 1960 population of 1,786,272 individuals, only 33,785 were of foreign birth or of foreign and mixed parentage. Of the total native population in Arkansas, 77% or 1,371,927, were born in Arkansas and 406,888 were born in other states. Of 1,591,854, the total population over five years of age, nearly half, 779,773, had lived in the same house for over five years, 506,222 in a different house in the same county, and 137,136 in a different county in the state. Thus 89.4% of the total state population over five years of age had lived within the state, most of them within the same county, and half of them in the same house over a period of years.

The gradual decline of the population since 1940 was examined. There was a 7.2% decrease among white males and a 2.3% decrease among white females in this twenty-year interval. There was a 21.0% decrease among negro males and a 17.2% decrease among negro females in the same period. The white population declined 4.8% while the nonwhite population declined 19.2%. Figure I shows the changes by age and by ethnic groups. The big drop can be seen to be in the productive age group of from 20 to 44 years.

The other two civil units of the United States population to show a decrease since 1950 are the District of Columbia with a 4.8% total decrease, and West Virginia with 7.2% total decrease. By contrast, the total population of the United States increased 18.5% in the same decade. There are 34 inhabitants per square mile in Arkansas, 51 in the United States and 518 in Connecticut.

The age distribution of Arkansas is essentially the same as that for the total United States. The median age in Arkansas is 29.0 years; in the United States, 29.5 years. The ethnic distribution is somewhat different. In the United States, 11.4% of the population is nonwhite; in Arkansas in 1960, 21.8%. The total percentage distribution of the negro population in Arkansas has dropped from one-fourth to one-fifth in this twenty-year period.

Little Rock, the largest city in Arkansas, constitutes 13.6% of the total population. The cancer commission and the medical school are located there. Also in Little Rock are four of the seven approved cancer clinics in the state and the nucleus of a statewide cancer record registry. The

state has 79 accredited general hospitals with a total of 5,962 bids. Six of these are in Little Rock with a total of 1,814 beds. In the state, there are 1,597 physicians and surgeons, or 89 per 100,000 population. There are 555 dentists. Since cancer of the buccal cavity accounts for approximately 15% of all cancer excluding skin cancer among males and about 2% among females, the role of the dentist in the early detection of cancer is very important.

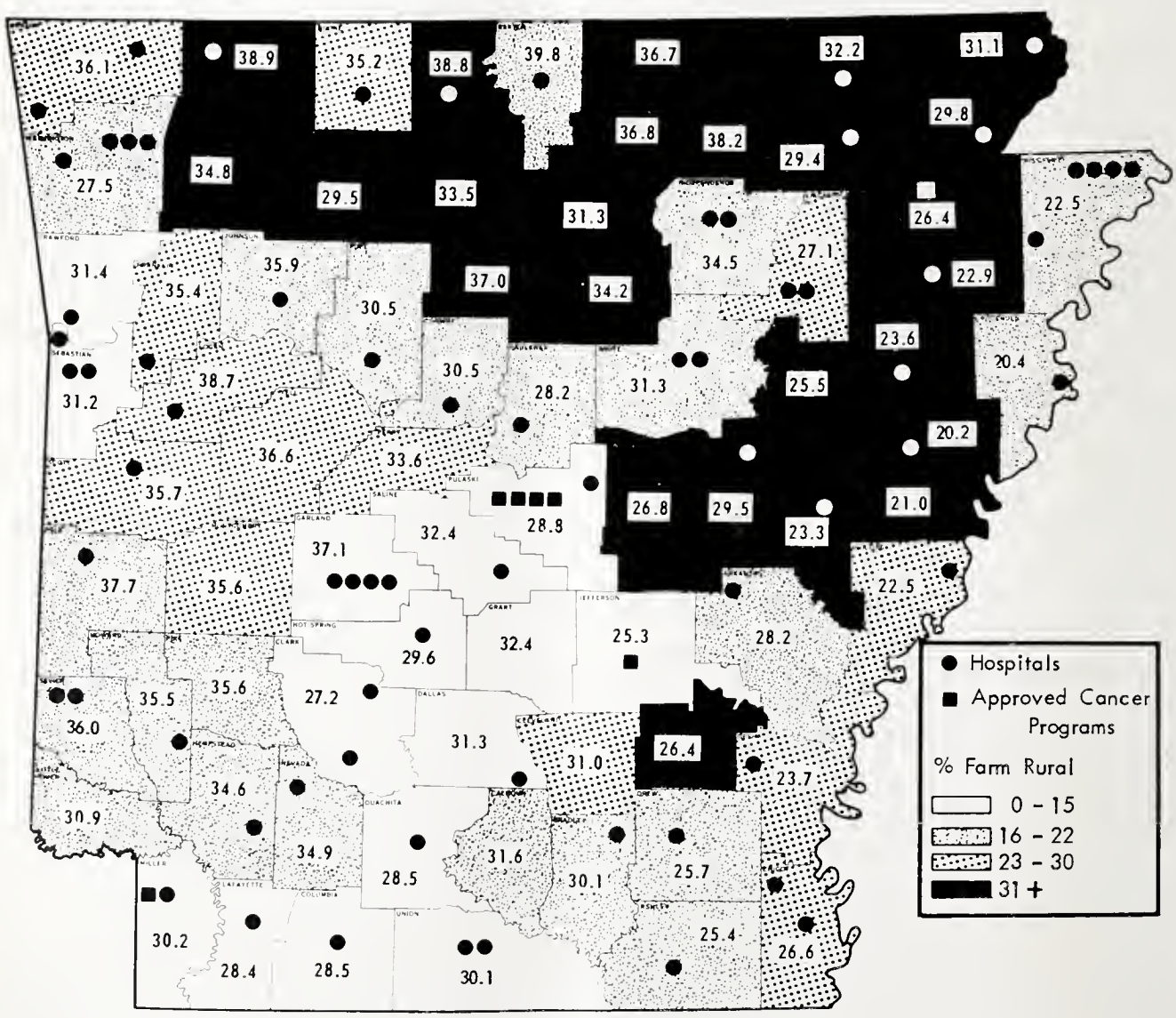
TABLE 1
Cancer Death Rates Per 100,000 Population, Crude and Age-Adjusted Arkansas, 1940-1960

	Cancer Deaths in Arka.	Crude Death Rate Per 100,000	Age-Adjusted Death Rate Per 100,000 Total	Male	Female
1940	1,303	66.8	87.0		
1941	1,304	67.0	85.2		
1942	1,380	71.1	88.2		
1943	1,323	68.3	82.9		
1944	1,396	72.2	85.7		
1945	1,559	80.8	93.8		
1946	1,517	78.8	89.5		
1947	1,714	89.2	99.2		
1948	1,774	92.5	100.7		
1949	1,819	95.1	101.4	97.1	112.4
1950	1,897	99.3	103.8	100.0	114.6
1951	1,907	100.5	102.5	104.0	107.7
1952	1,964	104.2	103.7	111.4	102.8
1953	1,930	103.1	100.2	103.6	103.2
1954	2,047	110.0	104.5	114.4	101.4
1955	2,133	115.4	107.1	119.0	102.2
1956	2,216	120.7	109.4	121.8	104.4
1957	2,300	126.1	111.7	127.0	104.2
1958	2,403	132.7	114.9	130.1	107.6
1959	2,397	133.3	112.8	131.4	102.4
1960	2,438	136.5	116.8	129.9	104.2

The age-adjusted cancer death rates have been figured for each year from 1940 through 1960 (Table 1). From 1949 through 1960, the rates are shown by sex. Arkansas has one of the lowest cancer death rates in the United States. It was the lowest in 1940 at 87 per 100,000 population. In 1960 for the total population, the age-adjusted cancer death rate was 116.8 per 100,000; for males, the rate was 129.9 per 100,000, and for females, 104.2 per 100,000.

In Figure 2, the state is shown divided into counties with the median age in each county. The proportion of farm rural population is given according to the key on the chart. Hospitals are in-

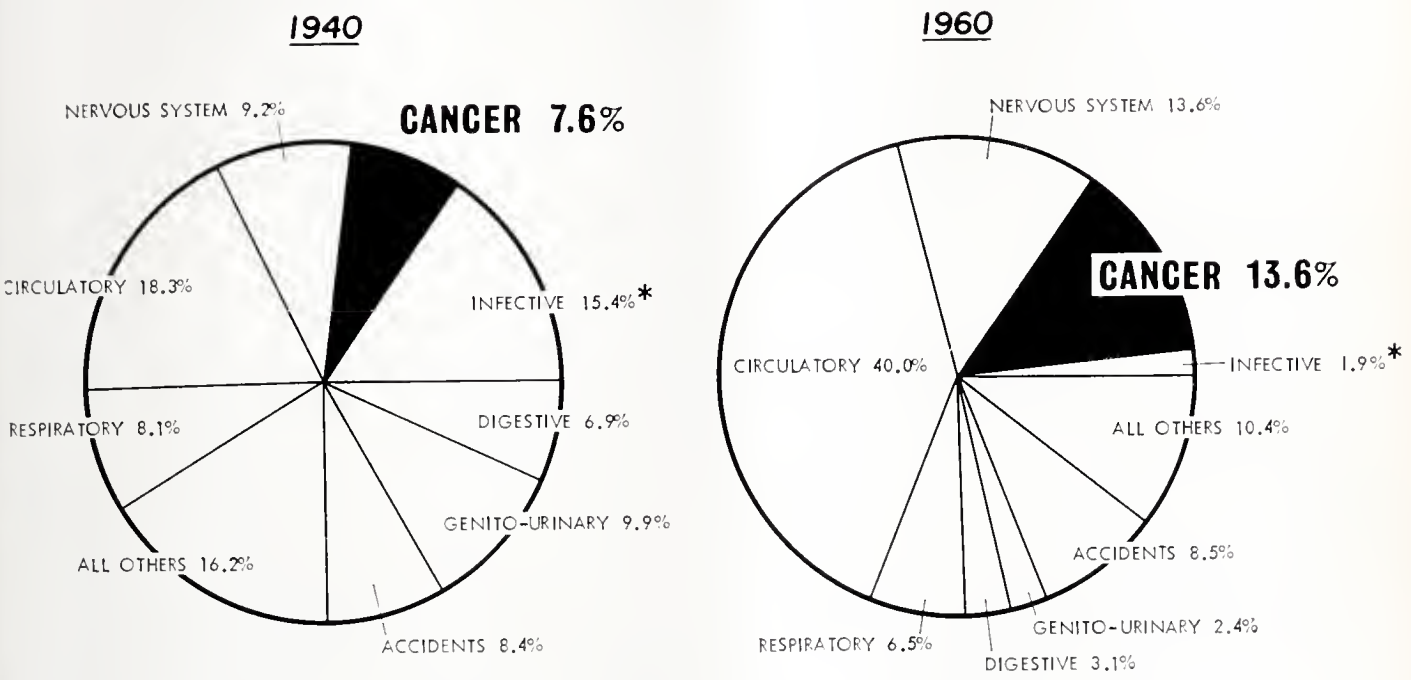
FIGURE 2



Median age, percent farm rural population, hospitals and approved cancer programs in Arkansas, 1960.

FIGURE 3

ARKANSAS



* Includes parasitic diseases

Major causes of death, changing proportions, Arkansas, 1940, 1960.

dicated by dots and approved cancer programs by squares. The south central section will be seen to be less rural than the northeast section which is more than one-third rural. The approved cancer programs are in the more heavily populated areas.

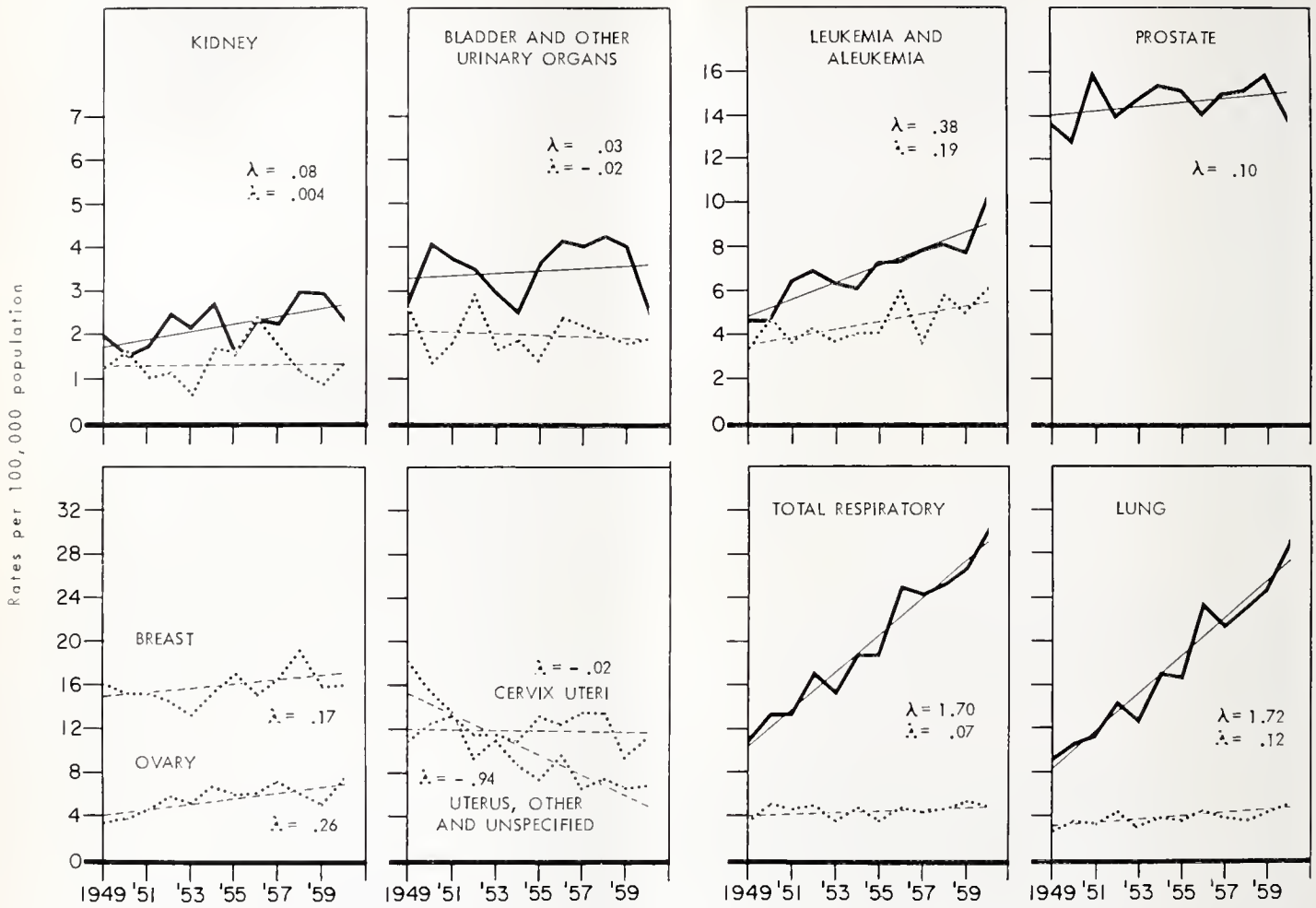
In Figure 3, the changing proportion of the major causes of death in Arkansas is shown for 1940 and 1960. Circulatory ailments and cancer combined accounted for 25.9% of the total in 1940. In 1960, these two accounted for 53.6% of the total Infections and parasitic diseases as a cause of death decreased from 15.4% of the total in 1940 to 1.9% in 1960. Genitourinary disease decreased from 9.9% to 2.4%. Diseases of the nervous system increased from 9.2% to 13.6%. The mortality rate for the United States in 1962 was 9.5 per 1,000. In 1940, the rate per 1,000 was 10.8; for 1950, 9.6; for 1960, 9.5; and for 1961, 9.3. In the same period, Arkansas had the following rates per 1,000 population: 8.8 for 1940, 8.1 for 1950, 10.0 for 1960, 9.8 for 1961, and 10.4 for 1962. This is one of the eight highest death rates in the fifty states and the District of Columbia. This is emphasized by the decrease in population which occurred in the 20 to 44 year age groups in which mortality is lower, and by the continued residence in the state of older residents, in which the mortality is higher.

In Figure 4, the age-adjusted cancer mortality rates by sex for each of the major categories are shown for the years from 1949 through 1960. Each graph shows the annual rates with the fitted trend line drawn and the average annual increase or decrease per 100,000 in the rates indicated. The increase in males is high, with an increment of 3.37 per year. The rate for females is declining at the rate of .66 per year. A further breakdown by ethnic group shows that the rate is decreasing among white females and is increasing among negro females. The male rates run parallel for both ethnic groups.

Mortality is increasing slightly among both males and females with cancer of the buccal cavity and pharynx. Cancer of the skin shows a decrease in mortality in both males and females. The trend in cancer of the brain and central nervous system is not changing for males and slightly declining for females. Mortality from lymphosarcoma shows an increasing trend in both males and females, but is more marked among males; the increment increase per year for males is .25 and for females, .19.

The death rates for cancer of the digestive or-

FIGURE 4

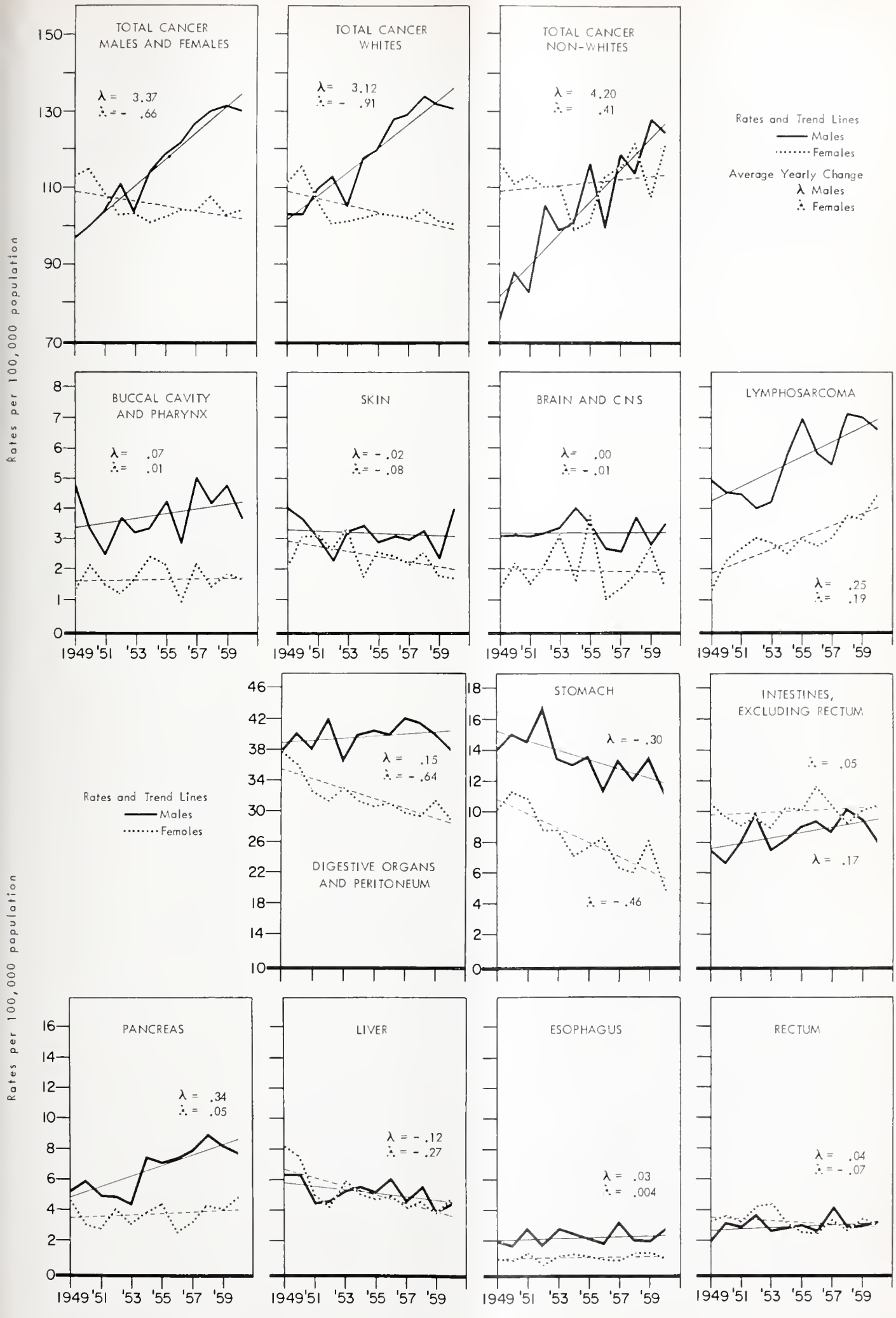


Age-adjusted cancer mortality rates per 100 000 population by site and sex, Arkansas, 1949-1960.

gans and peritoneum show an increase for males and a decrease for females. The decrease for both males and females is most marked in cancers of the stomach and liver. In cancer of the stomach among males, the annual decrease is .30 per year. Among females it is .46 per year. In cancer of the liver, the decrease is .12 per year among males and .27 per year among females. Cancer of the intestines excluding rectum shows a slight increase, greater among males than among females, Cancer of the rectum is leveling almost to no increase for males and is declining for females. Cancer of the pancreas is increasing among males as a reported cause of death. It has an average annual increase of .34. Cancer of the pancreas is leveling off among females. Cancer of the esophagus is leveling off for both males and females. In all the sites of the digestive tract except intestines and rectum, the male mortality rate exceeds the female rate.

Cancer of the kidney is increasing slightly among males, and is nearly stable for females. Mortality resulting from cancer of the bladder is leveling off for males and declining for females. Mortality rates for cancer of the prostate are increasing slightly. Leukemia has an increasing mortality rate of .38 per year for males and .19 per year for females.

Among females, the death rate has declined .02 per year for cancer of the cervix uteri. Cancer of the body of the uterus is decreasing more rapidly, .94 per year. Cancer of the breast among females has a slightly increasing mortality rate, as has cancer of the ovary. All the cancers of greatest prevalence among females are leveling off or decreasing in Arkansas. In the areas where intensive educational work has been done by members of the medical profession and the American Cancer Society, the results are measurable in the reduction of the death rates. When a cancer education program reaches a whole state, the mortality rates for the accessible sites reflect the educational effort most particularly. The greatest increase in mortality rates in Arkansas as in all the other states has occurred in cancers of the respiratory tract. For males, the age-adjusted mortality rate reached


TOTAL CANCER
MALES AND FEMALES
λ = 3.37
∴ = - .66
TOTAL CANCER
WHITES
λ = 3.12
∴ = - .91
TOTAL CANCER
NON-WHITES
λ = 4.20
∴ = .41
Rates and Trend Lines
Males
Females
Average Yearly Change
λ Males
∴ Females
Rates per 100,000 population
BUCCAL CAVITY
AND PHARYNX
λ = .07
∴ = .01
SKIN
λ = - .02
∴ = - .08
BRAIN AND CNS
λ = .00
∴ = - .01
LYMPHOSARCOMA
λ = .25
∴ = .19
1949 '51 '53 '55 '57 '59
Rates and Trend Lines
Males
Females
DIGESTIVE ORGANS
AND PERITONEUM
λ = .15
∴ = - .64
STOMACH
λ = - .30
∴ = - .46
INTESTINES,
EXCLUDING RECTUM
∴ = .05
λ = .17
Rates per 100,000 population
PANCREAS
λ = .34
∴ = .05
LIVER
λ = - .12
∴ = - .27
ESOPHAGUS
λ = .03
∴ = .004
RECTUM
λ = .04
∴ = - .07

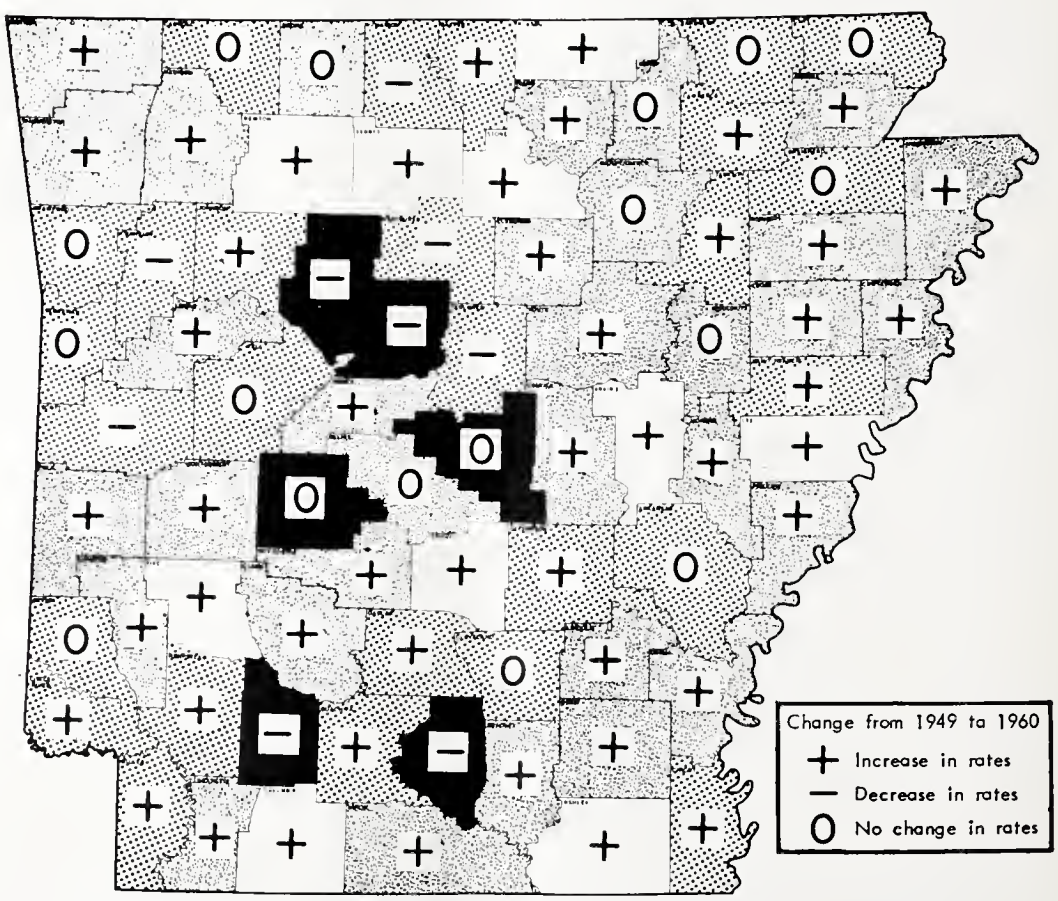
30 per 100,000 in 1960. For females, the increase is negligible, .07 per year. Cancer of the lung is shown separately in the last graph. There is an average annual increase among males of 1.72 and among females of .12.

In order to further break down the distribution of cancer deaths, age-adjusted rates for total cancer were figured for each county in Arkansas. Figures 5a and 5b give our findings for 1949 and 1960, the two end years in this study. In 1949, 6 of the 75 counties in Arkansas had an age-adjusted cancer death rate larger than 120 per 100,000 population. By 1960 this number had increased to 25 counties. There were 10 counties with rates less than 78 per 100,000 in 1949, while only one county had a rate less than 78 per 100,000 in 1960. There was a decrease in cancer mortality in 9 counties. Seventeen counties had no change in rates. Forty-nine of the 75 counties showed an increase in cancer mortality from 1949 to 1960. In 1960 the counties with the highest rates were located in the southern half of Arkansas.

It is generally agreed that no population group is free from cancer; however, great variation appears to exist among different population groups in the primary sites of cancer. These impressions must be replaced by facts. No single hospital ever has the same distribution of cancer by site as the population from which its patients are drawn, because patients tend to go to hospitals where specialists of their choice practice. That is why analysis of one hospital's data may not be compared with that of another without some adjustment. To know the actual incidence and survival of cancer in Arkansas, a statewide registry should be considered. The population is large enough, but not too large, to attempt this. The principle of a central registry and of follow-up of all cancer patients has been accepted.

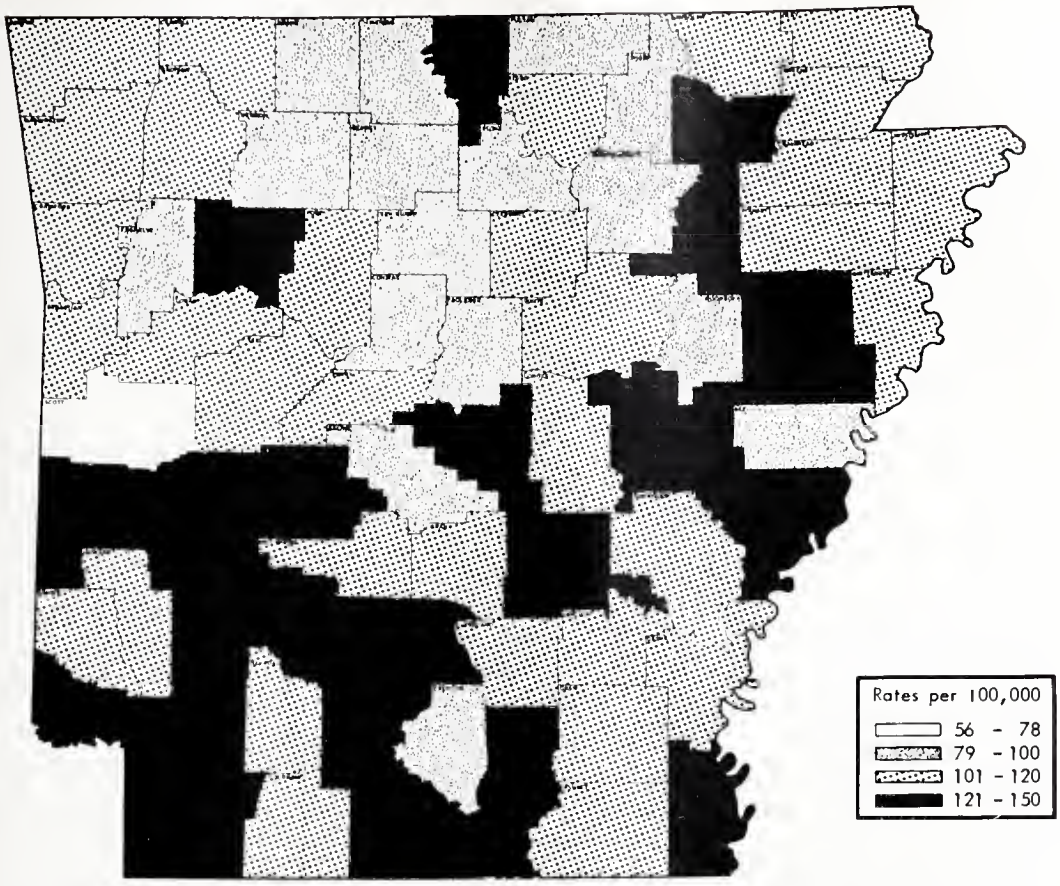
When it became evident 47 years ago that some standardization should be effected to raise the level of surgical care of patients in hospitals throughout the United States, the American College of Surgeons, with the encouragement and backing of the American Medical Association and the American Hospital Association, undertook regular accreditation visits. It became a matter of well-deserved prestige for a hospital to obtain that accreditation. For 35 years the American College of Surgeons carried this burden alone. Then in 1952, at the request of the College's membership, the accreditation board was enlarged to include

FIGURE 5a



Age-adjusted cancer mortality rates per 100,000 population by county, Arkansas, 1949.

FIGURE 5b



Age-adjusted cancer mortality rates per 100,000 population by county, Arkansas, 1960.

the other specialties. There has been no public health measure that raised the service to the patient as much as did this one, or so universally. In the early 1930's the college directed its attention to the need for the improvement in the care of the cancer patient. After years of study and preparation, the minimum standards for the care of the cancer patient were drawn up and agreed upon by the members. The accreditation of cancer clinics was added to the task of the officer who was inspecting for general accreditation. Eventually this program became so important that four inspectors make regular visits to institutions requesting accreditation, and the approved cancer programs in the United States numbered 1,000 as of June, 1964. That all these efforts on the part of the medical profession in several of its branches has effected a change is evidenced in the number of cancers being seen earlier, and the increasing number of successfully treated patients who have had the disease.

In order to encourage more institutions that are eligible and to assist those that need some small changes to become eligible, the American College of Surgeons has begun a regional program which covers the entire United States and Canada. There are twelve regions. Each region has one coordinator, to whom local coordinators report. All are members of the American College of Surgeons and each man is giving of his time to work toward universal approval and accreditation of all institutions treating cancer, for by this method of care, diagnosis and treatment of the cancer patient can improve simultaneously in every area.

Arkansas is in Region 7. The other states in Region 7 are Missouri, Kansas and Oklahoma. Arkansas has the lowest age-adjusted cancer mortality rate of these four states. In 1959, it had the lowest mortality rate of the four states for cancer of the breast and respiratory cancer, and the highest mortality rate for cancer of the stomach. There are 130 members of the American College of Surgeons in Arkansas. Many of them are on the staffs of hospitals which have not sought recognition or accreditation. There are four communities, Camden, Fort Smith, El Dorado and Fayetteville, with hospitals of more than 100 beds each, which have not sought accreditation. There are nine communities, Siloam Springs, Harrison, Lake Village, Morrilton, West Memphis, Malvern, Newport, Russellville and Searcy with hos-

pitals of 50 to 100 beds which have not sought accreditation. Establishment of a cancer committee and a follow-up program would make many of these eligible. Some of them have cancer committees or tissue committees, and practice follow-up procedures. They will be encouraged by members of the American College of Surgeons in their regions to meet these requirements and become accredited. It is known from surveys conducted by the regional coordinators that many of the hospitals are already fulfilling the minimum requirements but have not applied for accreditation.

If each of the 79 accredited general hospitals in Arkansas would add abstracts and follow-up reports of all their cancer cases to the nucleus of the seven contributing sources now in the central registry, and each of the 1,597 physicians and the 555 dentists would check and follow their patients with cancer or suspected cancer and send this information to their local registries, tabulation and analysis of the wealth of material thus obtained could be done at the medical school. This analysis could yield answers to some of the questions that so badly need answering, e.g.: Why, in this homogeneous population of long stable residence, is there a lower mortality from cancer of the breast than for any other state except Wyoming? Why does the mortality rate from cancer in Arkansas, Wyoming and Idaho run generally lower than the rest of the United States? Could some answer be derived by analysis of the total cancer experience in Arkansas to the puzzling question of sex in different kinds of cancer?

Usually cancers of the uterus and of the breast are numerically greater in occurrence than are cancers of other individuals sites. When these two sites are excluded, why is it that cancer of the common sites occurs more frequently among males. In Dorn's (3), Clemmesen's (4), and the senior author's work (5), there is a disproportionate occurrence between males and females. Incidence is not consistent for all common sites for any of the series. In Connecticut, in the first 20,000 microscopically proved cases in the registry, females had more cancer of the liver and large intestine than males.

In the Arkansas mortality reports, the rates among males and females are almost identical for cancer of the liver; also, although females have more cancer of the intestine excluding rectum, the rates are gradually approaching one another. The blood dyscrasias are consistently higher among males in all series, including the mortality reports of Arkansas. The greatest disproportion among males from female in Arkansas occurs in buccal cavity and pharynx, stomach, pancreas, lung, leukemia, and lymphosarcoma.

What inhibiting factor is present in females that assures them lesser risk of cancer of the common sites than males? Or conversely, what variables are present in males and females to an extent large enough to account for this difference? Are these differences inherent or environmental? Understanding of the exotic and unusual sites of cancer in their natural environment is being pursued by some of the most qualified men working in the cancer field in all the countries which are represented in the membership of the geographic pathology and demography of cancer congresses which began in 1950 and meet regularly. What might be equally productive of insight into the problem would be to answer these questions posed above, the same questions that are suggested to the mind of each student of the cancer problem by his daily observation.

In conclusion, the facts concerning the epidemiology of cancer in Arkansas, as far as it is possible to determine them from existing data, have been presented, together with a suggestion for the final and total coordination of the facilities in hospital plants, professional skills, and research orientation that this progressive state contains. It is possible that Arkansas, with its homogeneous population of two ethnic groups, may reveal by analysis of its cancer incidence and prevalence, the basic uncomplicated situation in cancer as a model against which the heterogeneous situations in most other states may be evaluated.

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Alcoholic Heart Disease

W. Brigden and J .Robinson (Cardiac Department, *The London Hosp, London), Brit Med J* 2:1283 (Nov) 1964

Fifty patients with evidence of myocardial disease and long standing high alcohol consumption were observed over a nine year period. Other causes of myocardial disease were excluded and alcohol was considered to be causative. Three clinical groups were recognized: (1) Cardiac beriberi, in which therapeutic response to thiamine and withdrawal of alcohol was good. (2) Arrhythima was the principle feature of a larger group in association with evidence of chronic myocardial disease of varying degree. (3) Severe myocardial disease with hypokinetic heart failure, a limited response to treatment and early demise. The electrocardiogram showed a wide range of abnormality. Serum cholesterol levels tended to be low and mild polycythemia was common. Necropsy in nine cases revealed hypertrophy especially of the left ventricle with foci of degenerating muscles fibres, cellular infiltration and fibrosis.

Peripheral Neuropathy of the Alcoholic

J. Fennelly et al (Seton Hall College of Medicine, Jersey City, NJ), *Brit Med J* 2:1290 (Nov 21) 1964

Circulating B. complex vitamins were measured by micro-biological techniques in alcoholic patients with and without perpipheral neuropathy and results compared with values obtained in healthy subjects. Of the alcoholics with peripheral neuropathy, 86% had a signilicant reduction in circulating thiamine. A concomitant decrease in circulating riboflavin, nicotinic acid, pantolhenic acid, brotin, B_6 complex, folic acid, and/or vitamin B_{12} were present in 90% of this group. A reduction in circulating B vitamins was present in 44% of alcoholics without neuropathy but the degree of hypovitaminemia was less than in those with neuropathy. Thiamine therapy caused improvement in neuropathy in 16 of 29 patients. Of four patients with mild neuropathy not responsive to thiamine, two responded to addition of nicotinic acid, one to pantothenic acid, and one to pyridoxine. Refractoriness to all measures occurred in seven patients with moderate to severe neuropathy, six of whom had severe liver disease.

Surgical Treatment of Peripheral Arterial Insufficiency*

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Nashville, Tennessee

The widespread interest in peripheral arterial insufficiency which has followed the development of new diagnostic techniques and therapeutic measures for its relief is shared by the patient and his physician. These lesions are common and their high incidence makes an understanding of the new diagnostic maneuvers and available therapy important. Although the veritable cascade of new developments in the vascular field during the past decade have led to considerable controversy regarding many of problems, sufficient experimental and clinical facts have now accumulated to allow rational decisions for the majority of patients.

Diagnostic Methods

It should be immediately recognized that simple historic and examination methods permit a rather accurate estimate of the peripheral vascular situations, and that the role of more complicated techniques including angiography is that of definitive mapping of the lesion and selection of the actual surgical procedure.

A history of pain produced by exercise, often combined with peripheral coldness and color changes, suggests to the layman as well as to his physician that the extremity lacks sufficient blood for its use during exercise. Further occlusion, particularly of the collateral arteries, often results in a decrease in the blood flow productive of rest pain. This may particularly occur at night as the peripheral blood pressure drops during sleep so that vascular perfusion is no longer effective.

The important part of the physical examination centers on accurate evaluation of the pulses in the extremity. This is substantially aided by oscillometric measurement of the pulses in the muscle mass of the calf and thigh. An additional examination which is simple but not well known is elevation of the feet to 45 degrees with exercise by repeated dorsiflexion and plantar flexion at the ankle which results in a stress test of the circulation to the feet. A foot which retains proper color following this procedure is not likely to have serious organic occlusion of the arterial tree.

In this connection, it should immediately be recognized that arteriosclerotic arterial occlusion has two phases of which the first is the slowly developing thickening due to atherosclerosis, and the latter is the more rapidly developing final thrombosis in the interior of this already thickened vessel. The latter episode is often denoted historically by a sudden bout of foot, calf, or leg pain or coldness. It is usually differentiated from arterial embolism by the absence of an originating site of the embolus and by the lesser severity of the symptoms in acute thrombosis. The final occlusion most often occurs in the distal superficial femoral artery near the adductor magnus hiatus at Hunter's canal. Thrombosis often extends proximally and distally from this original site. The often continued patency of distal vessels following this allows successful surgical reconstruction in many instances.

The widespread segmental occurrence of atherosclerotic lesions is recognized, and should not be overlooked in evaluating the patient. Such remote areas are briefly indicated in Table 1, and should be considered in each patient. Attention to the legs alone without evaluating other portions of the arterial system may lead either to poorly conceived therapeutic measures or to actually disastrous overall results. Thus, repair of the arterially insufficient leg in the face of severe coronary insufficiency may result in postoperative over-exertion and cardiac catastrophy. Similarly, primary operation upon aortic or iliac occlusion, while overlooking cerebral ischemia due to extracranial arterial occlusion, may allow an early cerebral vascular accident even though the aortic or iliac surgery was itself entirely successful. Therapeutic emphasis must be properly placed.

Angiography

While the history and physical examination ordinarily allow a good estimate of the site and extent of the occlusive process in the peripheral artery, angiograms furnish the road map to successful definitive management, and are invariably necessary to proper treatment. An accurate angio-

*Presented to the Arkansas Chapter, American Academy of General Practice, Little Rock, October 8, 1964.
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SITE	HISTORY	EXAMINATION	SPECIAL TESTS	PREFERRED ANGIOGRAPHY
Brain: intracranial and extracranial (carotids and vertebral)	1. "stroke" 2. dizzy or unconscious 3. Visual symptoms 4. buzzing sound	1. carotid pulses 2. bruit or thrill in neck	opthalmodynamometry	carotid and vertebral arteriography
Aortic Arch Vessels:	1. absent "pulse" 2. arm claudication 3. cerebral symptoms	1. upper extremity and neck pulses		intravenous aortography
Arms:	1. absent "pulse" 2. forearm claudication	1. arm pulses 2. oscillometry 3. hand pallor after elevation-exercise		subclavian or brachial arteriography
Heart:	1. angina 2. myocardial infarction 3. congestive failure		EKG Master's test	retrograde catheter
Aorta:	1. "pulse in belly" 2. abdominal mass 3. buttock, thigh or leg claudication 4. sexual impotence in male	1. palpable aneurysm 2. aortic and femoral	1. chest film 2. KUB and lateral films	translumbar aortography
Mesenteric:	1. recurrent pain or indigestion			retrograde femoral catheter or high lumbar aortography
Renal:	1. hypertension	1. hypertension	1. N.P.N. 2. Howard test 3. venogram	retrograde femoral catheter or suprarenal lumbar aortography
Legs:	1. claudication or rest pain 2. foot pallor or coldness 3. distal gangrene	1. pulses 2. oscillometric 3. pallor after elevation-exercise 4. palpable aneurysm		

Table 1. Common historical evidences and physical signs of atherosclerotic arterial occlusion with special confirmatory tests and preferred methods of angiography.

gram to delineate the site and extent of the obstruction as well as the peripheral reconstitution and run-off constitutes the factor having the greatest direct effect upon the therapeutic decision. Omission of definitive angiograms for the sake of time and convenience often leads to incorrect therapy or to destructive amputation where salvage is possible. Careful preoperative angiographic evaluation combined with other general considerations pays such large dividends in terms of extremity and function salvage and avoidance of needless operation that the time and effort extended toward the x-rays are well worthwhile. Attempts to save a little time or inconvenience by performing angiography at the time of operation tend to lead to hurried decisions and to poorly conceived operative attempts. Some recent attempts have occurred to omit preoperative angiograms by performing them in the operating room with the patient prepared for whatever procedure is necessary avoids only a little time and effort and has distinct disadvantages in terms of wisdom of procedure and actual technical approach. While it is recognized that there is undoubtedly some risk associated with any such procedure, this risk is relatively small when angiography is carefully performed.

Each of the four general types of angiography useful in the diagnosis of peripheral arterial disease has somewhat different risks associated with

it. The safest method is percutaneous femoral arteriography using local anesthesia, and this is preferred wherever possible. This technique has been used personally for the last nine years without any major leg complication due to the arteriogram, although there have been numerous instances of local extravasation of the dye at the site of needle injection resulting in a small hematoma or temporary tenderness in the area. This experience leads to the belief that properly performed femoral arteriography is a relatively safe procedure.

Percutaneous femoral arteriography is performed under local anesthesia following suitable sedation by the injection of 50% Hypaque through an 18 needle passed from below upward into the common femoral artery. The ordinary bolus consists of 20 cc of the dye. Since the transit time from thigh to calf varies from a few seconds to as many as twenty to twenty-five seconds, individualization of the timing must occur to allow a single long film to delineate the entire arterial system from thigh to calf at a single exposure. Current practice is the slow injection of half the bolus over a period of approximately seven seconds followed by the rapid injection of the remaining half of the bolus at the time when the patient notifies the operator of pain in the calf resulting from the dye or at the end of the time limit. By this technique the majority of legs can be adequately visualized at a single exposure. If there is any question about adequacy of the examination, there is no hesitation in repeating the injection with another exposure.

Translumbar aortography is a more time consuming and complicated method consisting of injection of 30 cc of 50% Hypaque via a thin-wall No. 17 needle placed through the left lumbar area into the aorta. While local anesthesia may be used, it is not comfortable for the patient and general anesthesia is preferred. The injection may be made either proximal to the renal arteries or distal to them depending upon whether or not visualization of the renal vessels is desired. Translumbar aortography has achieved some notoriety by virtue of an occasional serious complication which has occurred, and which appear to do more to the dyes which were used previously than to the method itself. Present techniques include a number of safety cautions such as adequate preoperative intravenous hydration, injection of a 5 cc test dose prior to the actual bolus, avoidance of secondary injections into the aorta and placement of the dye distal to the renal vessels whenever it is not actually necessary to visualize them.

Intravenous aortography consists of the injection into both antecubital veins simultaneously with 50 cc of 90% Hypaque (totalling 100 cc) and exposure of a series of films by means of the rapid casette changer some several seconds later as determined by a Decholin circulation time. This technique is productive of definitive films in a high percentage of instances when the thoracic aorta and great vessels of the root of the neck are to be visualized. The diagnostic accuracy decreases if examination is directed at the abdominal portion of the aorta and is hardly worthwhile if one attempts to visualize the femoral vessels. The method does have the virtue of considerable safety and simplicity of injection since local anesthesia is used.

Retrograde aortic catheterization by percutaneous puncture of the femoral artery is particularly valuable in the examination of the small branches of the aorta such as the renal arteries where great opacification is mandatory for accurate examination. A 7 French catheter is passed by threading it over a coiled steel spring which has been placed into the arterial system originally through a percutaneous needle. The chief disadvantage of this technique has been the occasional damage to the wall of the femoral artery at the point where the puncture has been made. Its use is restricted to specific circumstances as noted above, and it is particularly avoided in elderly people known to have atherosclerotic lesions.

The most suitable method is chosen for each patient, and no attempt is made to use the same angiography for all patients.

Surgical Treatment

Lumbar sympathectomy. There is little doubt that if a strong flow of blood can be returned to the vascularly insufficient extremity by surgical reconstruction that such is greatly preferable to any indirect method such as sympathectomy which may increase collateral circulation. Patients with symptomatic arterial occlusion and with adequate distal vessels therefore become immediate candidates for direct arterial reconstruction rather than for management by sympathectomy. Also it increasingly appears that sympathectomy increases blood flow in the skin but does very little for the muscle blood flow. This is apparently the reason for its lack of benefit in the usual case of claudication. At present it is be-

lieved that sympathectomy should be restricted to patients with clear laboratory or clinical evidence of vasoconstriction, to patients with pregangrene without extensive tissue necrosis where arterial repair is not possible, and to patients undergoing aortic or iliac surgery where the sympathetic chain is easily exposed simultaneously with the other operation.

Choice of repair. Any form of direct surgery is more successful in large than small arteries not only because of the greater technical ease in handling larger structures but also because of the greater likelihood that even a small thrombus will cause failure in a small vessel. Despite hopes that several technical details as well as postoperative medications (such as anticoagulants and fibrinolysin) would be helpful in maintaining small artery patency following direct surgery, it still appears that the most important factor for any procedure is an exact, refined and atrumatic vascular technique. Many errors in handling the tissue which would be tolerated by large vessels will lead to failure in small arterial surgery.

It is well recognized that atherosclerotic disease of the aorto-iliac arterial system of the pelvis may cause major leg symptoms or even gangrene. It is less well recognized that there may be a high degree of stenosis or even complete occlusion of the distal aorta or proximal common iliac arteries in the presence of fairly good femoral and more distal pulses. Extensive collateralization about a short arterial block has resulted in good pulses in more than one instance and may cause the physician to overlook the proximal arterial occlusion. A high index of suspicion should therefore be cultivated toward the aorto-iliac arterial system in any situation where the femoral pulses are anything less than bounding or where the peripheral symptoms are not rationally and fully explained by demonstrable occlusions in the femoral popliteal system. Operations below the inguinal ligament demand the knowledge that a good blood flow is occurring to the femoral artery at that point.

Although homologous arterial grafts were useful for a time in the 1950's, their procurement was difficult and storage was not only expensive but caused much trouble in vascular centers. These disadvantages combined with late degeneration of homologous arteries when used to replace the femoro-popliteal arterial system led to general abandonment of this type graft in recent years.

The development of a variety of synthetic tubes began in 1952 and has progressed at this date to the use of either teflon or dacron prostheses of either woven or knit construction. At the moment there is personal preference for dacron tubes since teflon does not appear to be incorporated as well into the tissues of the body. In younger patients where some blood loss may be better tolerated the knit dacron tube is preferred to the more tightly woven tube which does not bleed through its pores at all. The results with such prosthetic replacement of large arteries such as the aorta and iliac vessels are initially excellent and as time progresses continue to be good, although occasional occlusions occur. However, when such synthetic prostheses are applied to small vessels such as the arteries below the inguinal ligament, the late success rate constantly decreases as thromboses and other accidents occur. These later problems using prosthetics, increasingly have led to the belief that they should not be used below the inguinal ligament and that the femoro-popliteal vessels can be repaired with autogenous tissues from the patient himself.

The autogenous tissue repair of small peripheral arteries such as the femorals and carotids can be carried out either by thromboendarterectomy or autogenous vein grafts. Combinations of the two are often useful.

Thromboendarterectomy may be performed either by the completely open technique preferred by the author, or by a semi-closed technique whereby distal and proximal incisions are made in the vessel with removal of the occluded material in between the incision by wire loops passed inside the artery. While the latter has a considerable number of advocates and is a more rapid procedure, there is somewhat more danger of leaving loose tags or bits of tissue which may lead to thrombosis. Personal preference is therefore for the completely open thromboendarterectomy with reconstitution of the vessel over an indwelling catheter which is removed as the last sutures are placed. This insures complete removal of all occluding tissue and repair with an adequate lumen. Figure 1 shows a typical case.

Approximately 90% of patients operated upon have a long saphenous vein suitable for use as a by-pass graft in the femoro-popliteal arterial system. This technique involves removal of the saphenous vein with careful ligation of its branches, irrigation of its interior with heparinized saline,



Thromboendarterectomy for femoral arterial disease.

reversal of the vein to allow the valve direction to point properly, and anastomosis as an end-to-side graft from the common femoral artery to the popliteal artery either above or below the knee. Once the difficult and time consuming technique of this procedure has been mastered, it is applicable to a great many patients. If the graft can be placed properly so that it will remain open for a few days, experience indicates that it very likely will remain open for a long period of time. Late occlusions are unusual whereas they occur frequently when synthetic tubes are used. Figure 2 illustrates a vein graft which has to date been patent over five years.

The experimental and early clinical data concerning such grafts has been previously summarized and will not be repeated.* Figure 3, however, shows a recent tabulation of 100 consecutive patients having such autogenous vein grafts. Follow-up times are to the last actual examination and do not necessarily indicate all of the time elapsed since operation. Examination of the figure will indicate that most of the failures occurred

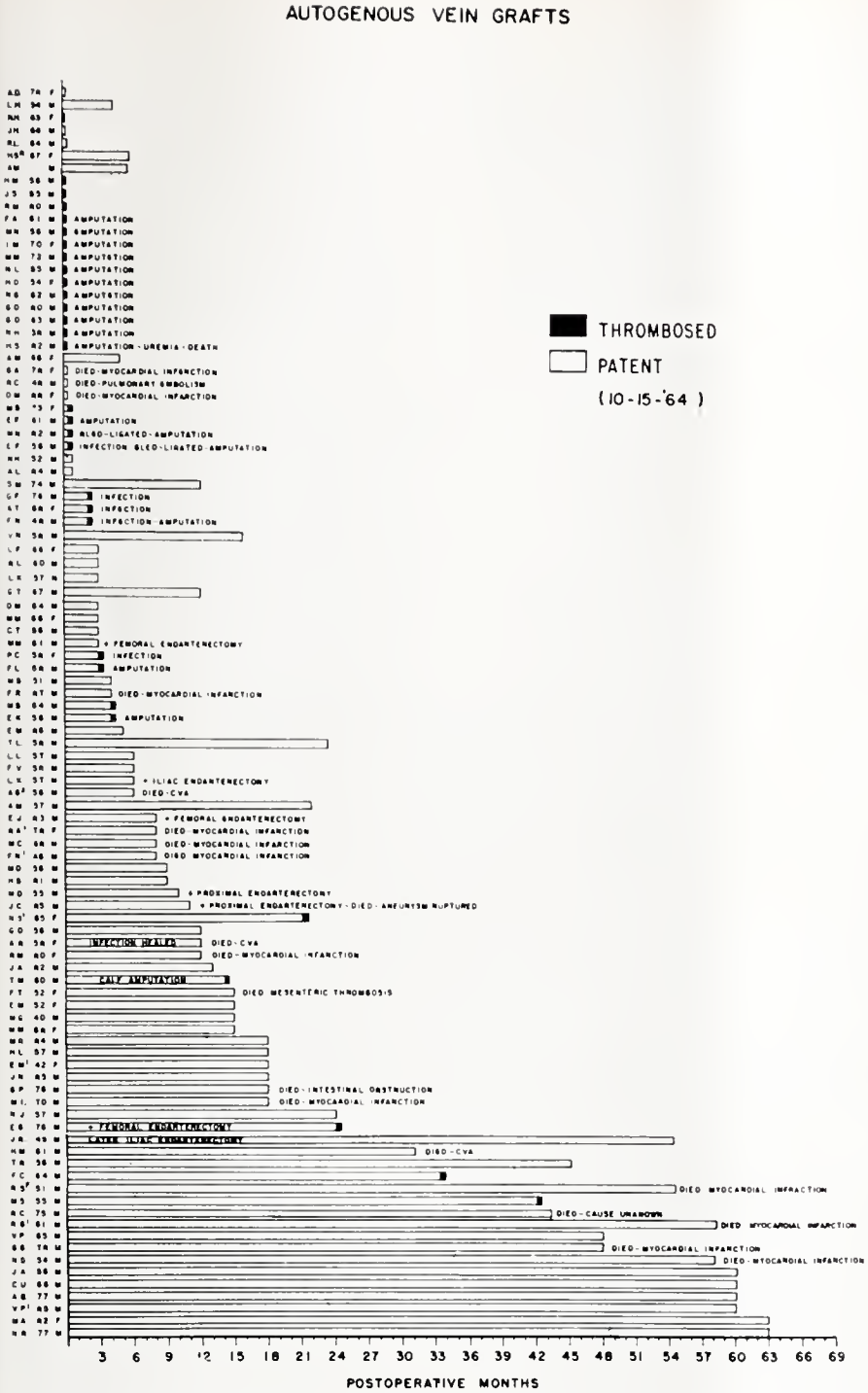
*Details of the experimental and clinical facts leading to this conclusion appear in the monograph "Autogenous Vein Grafts" by the author, Chas. C. Thomas, 1959.



Continued patency of vein graft despite further thrombosis distal popliteal artery. Left, 11 days after operation; right, 6 months later. Graft remains patent 5 years postoperatively.

immediately (and actually were in the early experience with the operation) and that only an occasional one occurred late after operation. The immediate failures often resulted from attempts to salvage a leg with extensively involved distal vessels.

The virtues of autogenous vein grafts are further attested by success in such grafting where the lower portion was anastomosed to the popliteal artery or to the posterior tibial artery or one of



Summary of postoperative follow-up on 100 autogenous vein grafts for femoropopliteal disease. Times indicate when the patient was last seen and not necessarily total time since the operation.

its branches below the knee. As figure 4 indicates, this has to date been successful in 18 of 29 instances. This particular reconstruction is such a severe test of any grafting material that the good results with autogenous vein is a particular strong point in their favor.

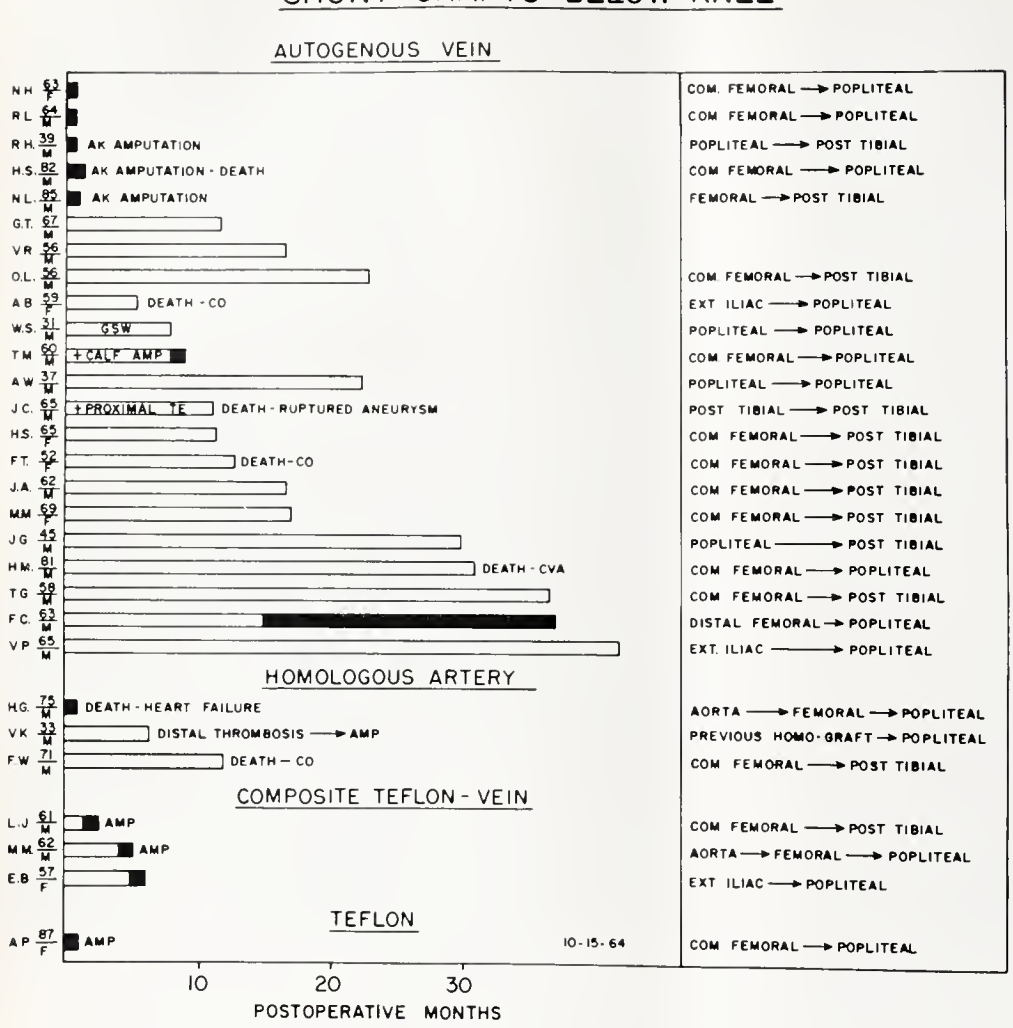
Table 2 summarizes current choice of procedure for several different peripheral arterial lesions.

Timing of Direct Arterial Surgery

The rapidity of progress of disease as well as the stage of arterial insufficiency aid in operative timing. Stability of claudication and other symptoms without major impairment of function indicates non-operative management. Thus, if the patient is not prevented from working or from carrying on his activity, operation is not recommended for minor non-disabling claudication. On

	SHORT BLOCK	LONG BLOCK	ANEURYSM
Large arteries (aortic, iliac)	1. Thromboendarterectomy	1. Thromboendarterectomy 2. Synthetic tube	1 Synthetic tube
Small arteries	1. Thromboendarterectomy	1. Autogenous vein graft 2. Thromboendarterectomy	1 Autogenous vein graft

Table 2. Current choice of procedure for arterial reconstruction.



Summary of 29 graft by-passes where lower end was distal to knee joint. Times indicate when the patient was last seen and not necessarily total time elapsed since operation.

the other hand, if the symptoms are major or incapacitating, operation is suggested at an early time before further propagation of the clot has occurred. If there is threatened loss of tissue with pregangrene, an immediate operation is undertaken.

In this connection it should again be noted that while the arteriogram serves as a guide to what can be done, the operation itself is done on the basis of the clinical situation and not because the patient shows a block on an arteriogram. Table 3 summarizes the "timing" of arterial surgery and emphasizes the indications.

Amputations

Minor amputations are often necessary in connection with peripheral arterial surgery where tissue has already become necrotic in toes. In this event, postponement of the minor amputation until after blood flow has been returned to the part is important to proper healing.

As experience with revascularization of extremities has increased, there have been salvages of pregangrenous extremities and of extremities with small areas of gangrene which several years ago would have been immediately amputated. This has led to the concept that major amputa-

TABLE 3
TIMING OF ARTERIAL SURGERY

Minor and/or nonprogressive symptoms	nonoperative treatment
Major symptoms Progression of symptoms Loss of function (walking)	early operation
Threatened loss of tissue	immediate operation

TABLE 4
PLAN OF MANAGEMENT OF THREATENED AMPUTATION FOR OCCLUSIVE ARTERIAL DISEASE

Good (2 or 3 vessel) runoff: vein graft
or
T E and patch
Poor (1 vessel) runoff: explore calf for possible vein graft
No runoff: repeat arteriogram if any question
or
explore calf for possible vein graft
or
sympathectomy
or
amputation

*Dale, W. A., Jacobs, K. E.: Lower Extremity Amputation. Results in Nashville 1956-60. Ann. Surg., 155, 1011, (June) 1962.

tions of the extremities should be preceded by arteriography or operative exploration of the popliteal area or calf prior to the actual amputation. Only by ascertaining whether or not there is distal patent circulation can some of these amputations be avoided. Table 4 summarizes management of patients threatened with early amputation and indicates the aggressive approach which is undertaken to salvage some of these extremities. Many of the patients summarized in figure 4 presented as pre-amputation problem.

When amputation does become necessary it should be carried out promptly and with good judgment so that primary healing immediately occurs. It is believed that most amputations distal to the knee in elderly individuals carry excessive risks in terms of healing with little advantage in terms of function by preservation of a knee joint. For this reason, most atherosclerotic extremities should be amputated above the knee. Few of such older patients will ever be able to use a prosthesis and stress should be placed upon immediate healing rather than maintaining a movable knee joint. The general principles of amputations have been outlined elsewhere on the basis of study of a large series of cases and will not be repeated here.* It should be emphasized, however, that the operation of amputation is too often regarded as an unimportant one, and this no doubt leads to the very poor results which are occurring everywhere today. Attention to details of the operation as well as to the level of the amputation immediately result in better healing rates and lower complication rates.

Summary

Critical selection of therapy for peripheral arterial insufficiency indicates different individual needs. A simple history and physical examination usually allows proper estimate of peripheral arterial lesions. Suitable angiography then allows decision as to whether operation is possible, and rational selection of the proper type arterial repair. While synthetic tubes are useful in repair of large vessels such as the aorta and iliac arteries, the use of autogenous materials including thromboendarterectomy and autogenous vein graft is recommended for the femoro-popliteal and carotid arterial systems. The proper selection of such materials allows good late results even when the distal end of the graft is carried below the knee joint and forms a most difficult operative procedure. An aggressive approach to patients with major symptoms or threatened amputation is recommended.

Linolenic Acid for the Prevention of Thrombosis and Myocardial Infarction

P. A. Owren, A. J. Hellem, and A. Ødegaard (Rikshospitalet, Oslo, Norway), *Lancet* 2:975 (Nov 7) 1964

Patients with atherosclerotic disease have an increased thrombotic tendency which is characterized by increased activities of the anti-Willebrand factor (the bleeding factor lacking in von Willebrand's disease) and of factor VIII. The activity of the anti-Willebrand factor can be determined indirectly by measuring the platelet adhesiveness with a modification of Hellem's method. The increased activity can be reduced to normal by taking linseed oil or linolenic acid. Linoleic acid and the pentaenoic and hexaenoic unsaturated fatty acids are without effect. These findings warrant the testing of linoleic acid as a preventive measure against thrombosis and thrombosing atherosclerosis.

Electrical Induction of Sleep

B. Straus (123 E 83rd St, New York), A. Elkind, and C. A. Bodian, *Amer J Med Sci* 248:514 (Nov) 1964

Sleep induction was studied in 34 hospitalized patients with the use of an electronic device which administered a weak current tothe brain. The electrical treatment was compared with a simulated treatment and with the effect of the administration of 0.1 gm of phenobarbital as a reference standard. Analysis of the results showed that the instrument approached the effectiveness of 0.1 gm of phenobarbital in inducing a state resembling physiological sleep according to the subjective and objective evaluations. The instrument was more effective than the placebo according to the objective appraisal. It was not significantly different from the placebo according to the subjective response of the patient.

Phenylketonuria and Screening Tests in the Newborn And Screening of Newborn Infants for Metabolic Disease

The following information on Phenylketonuria and Screening Tests in the Newborn and Screening of Newborn Infants for Metabolic Disease is on a subject of widespread current interest. Legislation has been suggested for submission to the Arkansas Legislature which would make P.K.U. tests compulsory in Arkansas. The Council of the Arkansas Medical Society, while agreeing that such tests are desirable, opposes making P.K.U. testing compulsory. It recommends that all physicians routinely administer such tests but that it be done on a voluntary basis.

The following statement from the American Medical Association is deemed pertinent in this regard.

Statement on PHENYLKETONURIA AND SCREENING TESTS IN THE NEWBORN

Committee on Maternal and Child Care
Council on Medical Service
American Medical Association

The basic clinical facts of phenylketonuria have been recorded in the medical literature since the first recognition and description of this disease in the early 1930's. The vast increase in understanding of enzymes and metabolic processes of the body during the last few years have enabled the biochemist and geneticist to quite completely describe the metabolic abnormalities found in this disease and to relate them to the clinical manifestations. The demonstration within the past few years that proper dietary management of these patients from early infancy may prevent the mental retardation, which is part of the syndrome, has stimulated widespread medical and public interest in the possibilities of mass screening tests for early detection.

The clinical experiments over the past few years, involving the management of children on diets containing little or no phenylalanine, have shown that it is possible to keep the blood level of phenylalanine close to, or within normal, limits. These experiments have also shown that if such a diet is begun before the age of six months and is adequately maintained, the intelligence of the child at the age of five years will be borderline to average. If the proper diet is begun earlier, the result is even better. Proper regulation of the dietary intake of phenylalanine to allow enough for normal growth but not so much that cerebral function is retarded requires the skills of pediatricians, nutritionists, psychologists and social workers, and a biochemical laboratory. Because of the continuing problems of management in this disease, as well as the rarity of the disease in any one physician's experience, these patients are often best handled in a multi-disciplinary setting.

Medical interest in the diagnosis of this disease has fostered refinements over the simple ferric chloride test for phenylketones in the urine. There now are at least two types of accurate blood tests for phenylalanine: one a bacteriological assay, and the other a chemical determination. These tests, while of great value in the diagnostic study of patients and their follow-up under dietary management have created most interest by their possible application as screening tests in the newborn period.

Because of the difficulty of interpreting blood tests and the hazard of unwarranted dietary restrictions, it is recommended that the screening tests be performed in large central facilities, such as a state health department or at least a regional laboratory. Since the disorder is rare, only a very large facility will process a sufficiently large number of positive tests to acquire skill in diagnosis. It is also most important that the laboratory have a close working relationship with a medical center where the diagnosis can be confirmed, the treatment diet chemically monitored, and the therapy supervised.

Recognizing the effectiveness of early detection and treatment in the prevention of mental retardation due to PKU, this Committee recommends the performance of a blood test for phenylketonuria on all infants in the early neonatal period. Practical considerations make it preferable to obtain the blood specimen just prior to discharge from the hospital, but at least 24 hours after first milk feedings. Retesting at a later date in early infancy is also recommended to rule out false negatives. All positives would obviously require more complete diagnostic evaluation.

The Committee also recommends that physicians, hospitals and health departments work together to develop means to implement this recommendation on a voluntary basis. It should be

possible to accomplish the universal testing of newborn infants for PKU with generally accepted tests in programs flexible to changing medical recommendations.

American Academy of Pediatrics
SCREENING OF NEWBORN INFANTS FOR METABOLIC DISEASE

Committee on Fetus and Newborn

An opportunity to establish screening procedures for case-finding in a number of metabolic diseases now exists in the United States, because most infants are born in hospitals where appropriate screening can easily be carried out. Case-finding in the neonatal period facilitates early inauguration of therapy, genetic counseling, and improved understanding of the natural history and incidence of metabolic diseases.

The Committee on Fetus and Newborn considered four types of screening programs:

1. Screening of all newborn infants.
2. Screening of specific groups of neonates with increased risk of certain disorders.
3. Large scale, pilot screening programs, designed primarily for research and acquisition of knowledge about the natural history of disease.
4. Screening of expectant mothers, particularly using tests of amniotic fluid.

The Committee did not consider screening of older children. However, it is emphasized that a number of important diseases, e.g., Wilson's disease, cannot be detected by screening in the first few days of life.

In evaluating screening tests for specific diseases, the Committee based its recommendations on the following criteria:

1. Does the seriousness of the disorder justify screening?
2. Is therapy for the disease in question available?
3. Is there a clearly identifiable segment of the population with an increased incidence of this disease?
4. Is it possible to perform reliable screening during the first few days of life?
5. Can the screening test be performed in a routine service laboratory.
6. Is the test acceptable to the physician and to a majority of parents?
7. Is the cost of the test acceptable?
8. Are there accessible medical facilities prepared to confirm diagnosis and consult about the institution of therapy?

Recommendations

At the present time the Committee believes the following recommendations on screening programs are justified:

Phenylketonuria

A blood test for elevated concentration of phenylalanine performed no sooner than 24 hours after onset of milk feeding and prior to discharge from the hospital is recommended for all newborn infants.*

A second blood test at 4 or 6 weeks of age is recommended for all infants. This will detect infants who had borderline or low plasma concentrations of phenylalanine in the first few days of life. It will also confirm a positive initial test.

Particular attention should be given to newborn infants in families in which another member is already known to have phenylketonuria, with these infants tested daily during the hospital stay. If results are negative at discharge the infant should be tested at 1, 2 and 6 weeks of age.

Because of the difficulty of interpreting blood tests and the hazard of unwarranted dietary restrictions, it is recommended that the screening tests be performed in a large central facility, such as a state health department, or at least regional, laboratory. Since the disorder is rare, only a very large facility will process a sufficiently large number of positive tests to acquire skill in diagnosis.

It is also most important that the laboratory have a close working relationship with a medical center where the diagnosis can be confirmed, the treatment diet chemically monitored, and the therapy supervised.

Melituria

Every newborn* should have a test for reducing substances (i.e., not utilizing glucose oxidase) in the urine on the day of discharge from the hospital.

The test should be carried out by the individual hospital laboratory.

It should be noted that metabolic disorders involving galactose and fructose (e.g. hereditary fructose intolerance) will not be detected in in-

*Particular care must be exercised in interpreting results of tests in low-birth-weight infants for the accumulation of phenylalanine and the urinary excretion of reducing substances because positive findings may not indicate an inherited metabolic disorder in this group of neonates.

*If local facilities are not available, information concerning this determination may be obtained by phoning one of the following institutions:
Children's Hospital of Los Angeles, Los Angeles, California
(Dr. George N. Donnell)
The Children's Hospital Research Foundation, Cincinnati, Ohio
(Dr. Helen K. Berry)
Babies Hospital, New York, N.Y.
(Dr. Ruth C. Harris)

fants who have not been exposed to the substance in their diet, e.g., fructose excretion will appear only if sucrose or fructose were present in the feeding of an infant with fructose intolerance.

For newborn siblings in families of known galactosemics the following test is recommended: Heparinized cord blood should be obtained for measurement of galactose-1-phosphate uridyl transferase activity.* The infant should be placed on a lactose-free milk substitute until galactosemia can be ruled out. If cord blood cannot be examined, a haparinized specimen of blood should be obtained as soon after birth as possible.

Other Metabolic Diseases

After considering a number of other possible screening programs for diseases including maple syrup urine disease, fibrocystic disease, succinylcholinesterase deficiency, glucose 6-phosphatase dehydrogenase deficiency, cretinism, and gargoylism the Committee believes that at the present time screening tests for these disorders are not ready for application to *all* newborns. All infants born into a family in which an inherited metabolic disorder has been recognized previously should be carefully evaluated in the neonatal period and appropriate screening tests should be performed wherever possible.

The Committee urges that large-scale, research-oriented screening programs be undertaken at several centers; that several methods, including multiple inhibition assay, the newer chromatographic techniques developed for screening purposes, etc., be used in parallel, on blood samples; and that all infants studied in the immediate neonatal period be studied again at 4-6 weeks. In this way, incidence and natural history of a large number of inheritable metabolic diseases may be investigated. In addition, the most appropriate and efficient screening techniques can be determined. As knowledge accumulates such tests might become applicable to *all* newborns or older infants on a routine basis.

There is insufficient evidence at the present time to warrant screening of all expectant mothers.



Renal Glomerular Lesions After Administration of Carbon Tetrachloride and Ethonine

H. Sakaguchi et al (Keio University Medical School, Tokyo, Japan) *Lab Invest* 13:1418-1426 (Nov) 1964

Rats receiving carbon tetrachloride or ethionine developed progressive changes, consisting of fusion of epithelial foot processes, subendothelial and mesangium deposits of amorphous and of granular material, thickening of the basement membrane, and increase in mesangial matrix. The structure and the evolution of these lesions were similar to those of human glomerulosclerosis associated with hepatic disease. Both the human and the experimental lesions of this type are believed to be secondary to liver derangement of various etiologies and are not limited to liver cirrhosis. It is suggested that the name hepatic glomerulosclerosis be employed.

Mammary Tumor and Leukemia Induced by Various Doses of 3-Methylcholanthrene in Pseudopregnant Mice

G. Bonser et al (University of Leeds, Leeds, England) *Lavori Ist Anat Univ Perugia* 24:69-74 (No. 2) 1964

Varying doses of 3-methylcholanthrene were administered by stomach tube to five groups of pseudopregnant mice. In all groups the incidence of tumors and leukemia was much higher than in control animals. There was no clear correlation between the total dose of the drug administered and the total dose of the drug administered and the incidence of tumors or leukemia. The highest incidence of mamary tumors was obtained with a moderate dose administered for 15 weeks, while 69% of the animals developed leukemia after a long-term treatment with high doses of 3-methylcholanthrene. Various other tumors occurred.



WHAT'S NEW?

"The Hand Service of the University of Arkansas Medical Center"

THE RHEUMATOID HAND

Harold Chakales, M.D.*
Kenneth Jones, M.D.**
Benjamin Drompp, M.D.***

THE PATIENT WITH RHEUMATOID arthritis may present the physician and surgeon a most vexing medical problem. The old "burned out" rheumatoid arthritic with grossly deformed digits and a flexed wrist represents a grotesque mockery of the normal prehensile hand. In order to forestall or circumvent this catastrophe, the physician of today must have a broader concept and a more extensive medical and surgical arsenal with which to counter the pathological forces of nature loosed in the tissues by this crippling disease. To adequately assist the patient with rheumatoid arthritis, it is necessary to understand the disease process and the pathological changes resulting therefrom.

Rheumatoid arthritis is a disease of the mesenchymal tissues. In the hand, as elsewhere, it involves primarily the synovial membrane producing an inflammatory synovitis. The tendon sheaths are involved as frequently as the synovial lining of the various joints. Often the disease is evident first in a tendon sheath as a painful swelling with the articulations becoming affected later.

Healthy synovial membrane is a thin membrane lining a joint which produces a lubricating fluid. In the rheumatoid patient, this mesenchymal structure may become an aggressive, proliferating, invasive tumor mass. Joints, tendons, nerves, and blood vessels may be enveloped. Pannus can creep from juxta-articular areas over the articular hyaline cartilage.

The invading synovial mass destroys tendons



Figure 1: Severe rheumatoid synovitis with marked involvement of the extensor mechanisms of the hand at the level of the wrist.

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on both the volar and dorsal aspects of the wrist, both through direct invasion and indirectly by impairment of their blood supply. Gradual attrition with subsequent rupture of the tendons occurs in time. Normal functions of the hand are replaced by groping adaptations. The pathological synovial membrane and the inflamed surrounding tissues are often edematous and painful. Symptoms and signs of median nerve compression caused by the mass of excess tendon synovial tissue in the carpal tunnel can cause one of the types of "carpal tunnel syndrome ". Changes may be sufficiently severe to require release of the transverse carpal ligament.

Severe deformities occur in the hand. In the individual patient, the specific deformity is the product of many factors. The duration of the disease, the tissues affected, and the treatment administered must be thoroughly evaluated by the physician. Destruction of the articular cartilage and subchondral bone along with relaxation of the collateral ligaments result in various distortions of the involved articulations. Ruptures of tendons may render digits functionless. The "seal flipper" hand due to ulnar subluxation of the base of the proximal phalanges on their respective metacarpal heads is encountered frequently.

Both the "swan neck" deformity, hyperextension of the proximal interphalangeal joint in conjunction with flexion of the distal interphalangeal joint, and its antithesis the "boutonniere" deformity, flexion of the proximal interphalangeal joint with extension of the distal interphalangeal joints are encountered in this disease. The "swan neck" deformity, like the traumatic "mallet" finger, is due to loss of efficiency of the extensor mechanism as it acts on the distal phalanx, in association with an increase in efficiency as it acts on the middle phalanx.



Figure II: Evidence of severe rheumatoid disease, with the hand to the right more severely involved, showing the classical ulnar deviation of the fingers with subluxation of the digits and over-riding of the extensor mechanisms. There is also subluxation of both thumbs at the metacarpal phalangeal level. The arrow is pointing to the fingers exhibiting the marked ulnar deviation.

The "boutonniere" deformity is due to the exact reverse of these abnormal forces, with the lateral bands of the extensor tendons being displaced volar to the axis of the proximal interphalangeal joint.

Early in the disease process heat by means of water or paraffin baths, salicylates, phenylbutazone and regulated steroids on occasion will tend to reduce synovial inflammation and the patient's discomfort. As the inflammatory process becomes less painful, specific active and passive exercises are instituted. Dynamic bracing and passive splinting both day and night often help prevent impending deformities and in some instances contribute to the correction of those deformities already present.

C. Jiminex-Diaz in 1946 used systemic nitrogen mustard for treatment of rheumatoid arthritis with beneficial results.[1] At about the same time steroids given systemically or by local injections were introduced, but these failed to be the panacea long sought for this disease. Intraarticular injections of the nitrogen mustard family has been found to be temporarily beneficial, resulting in the concept of chemical synovectomy.[2]



Figure III: The arrow points to the fingers at the level of the proximal interphalangeal joint showing the classical "swan neck" deformity of the fingers. The index finger can be seen clearly and it shows its typical shape.

In 1962, Adrian Flatt published his work with Thio-Tepa, an analogue of nitrogen mustard which has some of the properties of nitrogen mustard, but does not possess cutaneous toxicity. When introduced into tendon sheaths and joints, clinical improvement similar to that produced by nitrogen mustard resulted. While benefits from intra-articular Thio-Tepa have yet to be fully evaluated, it is appreciated that the drug has a place in the management of the early rheumatoid arthritic patient.[3] Until recently the opinion of Sterling Bunnell, who felt that surgery in this disease should be reserved for the "burned out" hand, was generally accepted.[4] We now recognize that the disease is primarily one of the synovial membrane and that early removal of the synovial membrane by chemical or surgical intervention may prevent or delay the onset of many deformities. For unexplained reasons the new synovial membrane, derived by metaplasia from the supporting mesenchyme, does not as a rule demonstrate the same aggressive tendencies as the diseased synovial membrane which it replaces.

In many instances, function of the severely deformed rheumatoid hand can be improved by surgery. A wrist fusion will alleviate pain and provide a stable base for prehensile function. Ulnar and volar displacement of the extensor mechanism can be corrected or improved by one or a combination of the following procedures: synovectomy, capsulectomy, arthroplasty with or without a prosthesis, and relocation and stabilization of the extensor mechanism over the central axis of the joint. Deformities of the interphalangeal joints often require release of the intrinsic



Figure IV: The arrow points towards the middle finger which shows the typical "boutonniere" finger with the hyperextension of the distal interphalangeal joint.

musculature as well as one or more of those procedures that are effective at the metacarpal phalangeal level. In those instances where attrition and subsequent rupture of a tendon have occurred with loss of extension, tendon substitution, and/or tendon graft can restore function to these hands. In instances where the disease process is well advanced multiple procedures may prove necessary. Prior to undertaking this formidable challenge, the surgeon should have determined the final result he is seeking.

Treatment of the rheumatoid arthritic patient is a complex problem requiring skillful blending of the art and science of medicine. The tragedy of crippling that envelops the affected individual has significant psychosomatic ramifications. The patient must be given an understanding of the disease and encouraged to develop the mental adjustment necessary to "live with it". This educational process requires the understanding and cooperation of the family physician, as well as the rheumatologist and surgeon.

The Hand Clinic was established as a part of the Division of Orthopedic Surgery at the University of Arkansas School of Medicine in August of 1963. Although, oriented toward the rheumatoid patient, this clinic is available to all qualifying patients with any type of hand problem be it congenital, traumatic, metabolic, or neoplastic. It is hoped that by the team approach to these problems improved care can be rendered to all patients with hand problems in Arkansas.

Referrals by local physicians desiring consultation or assistance in management of hand problems are welcomed.

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Hepatic Surgery: Tranma, Tumors, and Cysts

W. P. Longmire, Jr. (University of California Medical Center, Los Angeles) *Ann Surg* 161:1 (Jan) 1965

In 90 cases reviewed, three types of liver trauma were found: (1) simple stab wound, (2) larger, but localized laceration, and (3) "bursting" type laceration accompanying blunt trauma. The trauma. The overall mortality rate was 27%. Continued hemorrhage was the most frequent cause of death. Three methods for control of bleeding were utilized: (1) direct suture, (2) application of absorbent hemostatic agents, and (3) resection of anatomical segment. Major hepatic resections were performed in six patients for hepatocarcinoma. Three patients survived from ten months to two years eight months. Resections were also performed for benign adenoma, focal nodular hypoplasia, hemangiomas, and isolated metastatic disease. Solitary, nonspecific cysts, or large cysts of polycystic disease may be excised or drained when sufficiently large to produce symptoms by pressure.

Metabolism of Linoleate and Palmitate in Patients With Hypertriglyceridemia and Heart Disease

P. J. Nestel *Metabolism* 14:1 (Jan) 1965

The metabolism of linoleate and palmitate was studied in eight subjects with coronary heart disease with plasma triglyceride concentrations ranging from 66 mg to 274 mg per 100 ml. In every experiment the fractional turnover rate of linoleic acid was greater than that of palmitic acid. The fractional turnover rate of linoleic acid, but not of palmitic acid, was found to be significantly and inversely related to the plasma triglyceride concentrations. The percent palmitate content of triglycerides of low density lipoproteins was determined by gas chromatography and was found not to vary with the conecntration of triglyceride. The percent linoleate content was, however, reduced at higher triglycerite levels. It is concluded that the development of some varieties of hypertriglyceridemia is accompanied by a corresponding increase in the turnover of palmitate but not of linoleate, and that this may represent increased synthesis of lipid from carbohydrate.

TEACHING SEMINAR

University of Arkansas Medical Center
Little Rock, Arkansas



ADVANCES IN RADIOISOTOPE INSTRUMENTATION

W. H. Perkins, M.D. and Wolfgang Lohmann, Ph.D.*

Radioisotope instruments now play a leading role in biomedical research. Just what the newer instruments are and what information can be gathered with them is the subject of this report.

The auto-fluoroscope or scintillation camera was developed as an outgrowth of scanners. It is now being used to visualize nearly all organs that can be seen by conventional radioisotope scanners. Superiority of this instrument over the scanner has been proven in many fields of medical research and clinical diagnosis. Although still in an early stage of development, it is already clear that scintillation cameras will replace scanners in the next few years.

Radioisotope scanning is used to visualize isotope localization in a variety of human tissues. The detected counting-rate difference between a tumor or an organ and normal adjacent tissue often is as small as 15-25%. To detect these small differences several important features must be incorporated into a scanner.[1]

First, high efficiency detectors are needed to achieve acceptable counting rates with low administered doses; second, collimators must provide adequate resolution for visualizing deep seated lesions; and third, a high contrast data-presentation system must present small differences in counting rates in a readily interpretable form.

These advances have been made and have extended the usefulness of scanning, but they have not affected its two major drawbacks. First, the distribution of the radioisotope used must be essentially static for the length of the scan, up to one hour, and second, ill patients are often unable to be motionless for such long periods.

Instead of slowly scanning an area of radioisotope distribution, scintillation cameras visualize the entire concentration at one time. Thus, one can make dynamic studies of the functioning of organs in both normal and diseased states by taking sequences of still pictures and time-lapse motion pictures. When the counting rate is high exposure times can be as short as one second per picture or less. Usually polaroid film is used. The one to ten thousand or more dots that are received over a period of time form the image.

Because scintillation cameras do not scan, very short half-life radioisotopes can be used and multiple views are encouraged, thus improving diagnostic accuracy. The short half-life radioisotopes can be used in rather large amounts improving picture quality, while the dose to the patient is low.

Scintillation cameras now in operation fall into three main groups: The gamma ray camera developed by Anger,[2] the positron camera developed by Anger and Brownell,[3] and the auto-fluoroscope developed by Bender and Blair.[4] All are non-scanning electronic instruments for making pictures of the distribution of gamma ray and position emitting isotopes in vivo.

The gamma ray and positron cameras use a single sodium iodide crystal 5 to 11.5 inches in diameter and 0.25 to 0.5 inches thick as detectors. The auto-fluoroscope seems the more promising

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approach. It uses a detector composed of a mosaic of 293 sodium iodide crystals 3/8 of an inch in diameter and 2 inches long. These are packed in a 6 by 9 inch array with a 1.0 cm. separation between centers.

The principal disadvantage of a single crystal is the necessary limitation on the crystal size imposed by manufacturing techniques. Also, if crystal thickness exceeds 0.5 inches a significant loss of resolution occurs. Resolution problems, such as positioning errors from multiple Compton interactions, can be reduced by using thin layers of lead or tungsten shielding between crystals as in the auto-fluoroscope. In addition, light output from the individually canned crystals is highly collimated.

Whatever type of crystal detector used, the major advance in scintillation camera design came with Anger's development of a data transfer system composed of a matrix of photo-multiplier tubes viewing the crystal.[2] The system detects the location of a photo-electric interaction and translates this into a positioning signal which can be displayed as a point of light in a corresponding position on the face of an oscilloscope. The disadvantage of the Anger system is that the size of the positioning signals and the resulting location of a flash on the oscilloscope depend on the absolute magnitude of the phototube pulse. Therefore, the validity of the positioning signal is directly related to the analyzer window width. To minimize positioning errors recorded pulses must be limited to a narrow pulse height range. The result is good resolution but decreased efficiency. In a new version of the auto-fluoroscope this disadvantage may be eliminated by a totally new approach to data transfer. Each of the 293 crystals is optically coupled to two plexi glass light pipes with 20 light pipes from a given rank going to another phototube. Pulses that occur simultaneously in any pair of phototubes uniquely identify the crystal in which the interaction occurred.

With the exception of thyroid visualization the auto-fluoroscope has been used for all clinical studies that ordinarily require a scanner. In studies using both a scanner and an auto-fluoroscope no lesions have been missed that were successfully visualized by the scanner.

Promising areas of clinical usefulness are in brain tumor localization, visualization of chamber of the heart, detection of liver metastases, visualization of functioning bone marrow and kidney image production. Widespread use of this instrument will occur when designs are stabilized and the cost (about $25,000) reduced.

A second development important to medicine is tiny radiation detector devices. New solid state and semiconductor devices[6] are small and rugged enough to be inserted directly into tissues and body cavities to measure radiation doses.

The solid state instruments are used to monitor radiation doses in the body. Changes induced in them persist for long periods and total dosage can be estimated at a convenient time after irradiation. Thus, they are useful for measuring spacial dose distribution in radiation therapy.

A readout instrument is needed to determine the amount of changes induced in the detectors by radiation. The instrument used depends upon the type of solid state detector to be measured. The solid state dosimetric systems which are most important for in vivo work use radiophotoluminescence thermoluminescence and electrical conductivity in cadmium sulfide. Of these, thermoluminescence provides the most sensitive system.

Solid state dosimeters works in the following way. Electrons, freed by ionization of atoms in solids, cause induced electrical conductivity as they move through the solid. They may recombine or become trapped at localized sites such as impurity atoms. This site may absorb light at different wavelengths from the unirradiated solids[5] or it may alter the luminescent response of the solid to ultraviolet light. If the luminescence is increased it is called radiophotoluminescence. In some solids the trapped electrons can be released by heating the solid. If the release gives rise to a burst of emitted light it is called thermoluminescence. Changes in cadmium sulfide conductivity are measured using simply a battery and a micro ammeter.

Miniature P-N junction semiconductors have distinct advantages for in vivo work. Unlike the solid state detectors readout is instantaneous and can be made during irradiation. They can be made almost any size and shape and operated at low voltage. They have a higher sensitivity per unit volume and are more rugged and easier to make than G-M tubes and ionization chambers. All these advantages make P-N junctions useful for dosimetry and for detecting tracer amounts of radioactivity in the blood stream. Moreover, they can be used to detect tagged tumors behind

the eye or tagged tumor tissue during brain surgery.

Whether semiconductors will find widespread use for tracer applications in vivo, such as tumor localization and blood flow measurements, depends on biological limitations more than on any physical shortcomings of the detectors. These limitations come mainly from the difficulty in interpreting physical measurements in terms of biologically important parameters. For example, in the case of blood flow or cardiac output the limitations refer to how well the injected bolus of radioactivity remains in its initial form or breaks up as it is carried by the blood stream. This limits the accuracy with which measurements can be interpreted. A third technological advance in radioisotope work is in data processing and analysis. Automatic data processing is coming to the rescue of researchers and clinicians confronted with growing volumes of routine analyses.

New methods of physical-chemical analyses in the life sciences, especially radioisotope techniques, are bringing the measurement concepts of the physical sciences to the biological. Increasingly, clinicians are demanding quantitative relations from their data. Researchers no longer consider the mathematics of life sciences too complex for analysis but a challenge.

The expansion of electronic computer techniques is a major factor in the changing attitude. First, they provide a solution to the handling of bulk data often found in biomedical work. For example, the multichannel analyzer must be used with data reduction programs to allow meaningful examinations of their output. Second, computers open up the possibility of analysis of complex mathematics. Readily available programs from a program library allow almost any problem that can be expressed as a set of equations, however complex, to be solved quickly. Statistical packages for elaborate correlations studies or sample analyses are also available.

The third use of computers is in non-metric relations, logical systems and pattern recognition. This could be a powerful approach which goes to the heart of many biological problems. Besides assisting in clinical diagnoses, EKG and x-ray interpretations, computers can be used to simulate isotope scanners for design purposes.

Most medical applications use digital computers. However, for many biological problems analog computers have advantages of simplicity, economy and ease of visualization of the problem and its solution. A very interesting approach is that of Macy who has a composite system of analogue and digital computers which combine the advantages of both approaches.[7]

The most common medical use of computers is the statistical analysis of diagnostic and clinical data. At the Massachusetts General Hospital over 5,000 radioisotope scans for brain tumors have been analyzed.[8]

Monte Carlo calculations are used to solve problems about radiation effects. Therapeutic treatment problems concern radiation areas in the management of malignancies where the objective is to deliver massive destructive doses to malignant tissue while keeping the radiation dose to adjacent normal organs low. The analysis is similar whether the radiation source is an x-ray machine, a CO^{60} source or an implanted radioisotope. The conventional approach is to calculate depth-dose curves in water for the desired type of radiation. The curves are superimposed on a diagram of the region to be irradiated to estimate dose levels. For a number of radiation beams or if the patient is rotated this calculation becomes tedious and inaccurate.

Obviously this is a job for a computer. An early application of computers to this problem was made by Tsien in 1955.[9] He used the machine to superimpose isodose charts for multibeam irradiation in a manner similar to hand calculators. Since then other radiology groups have taken up the problem. Sterling at Cincinnati is using isodose curves in a more flexible manner.[10] The computer typewriter prints out an actual picture, full scale, of the radiation pattern. Letters are used as symbols for steps of dose level to rapidly visualize the contours. The Biophysics Division at the Sloan-Kettering Institute is working on a program that takes into account the curvature of the skin, inhomogeneities of body tissue and rotation.

Spectrum analysis from many kinds of radiation resources is a major problem in life sciences. The application of activation analysis as an analytical tool is hampered by the fact that specimens to be scanned are mixtures. Watson[11] has a computer perform a matrix analysis on the counts in each photopak to separate an unknown mixture into proportions of the standard components.

In medical research it is easy to collect enormous numbers of samples. The mathematics in-

volved may be simple, but there is lots of it and hand calculations are a common source of error. At the University of Cincinnati all isotope counting is recorded on punched paper tape for computer processing.

One of the principal uses of radioactive tracers in medical research is to follow a chemical component through its metabolic transformation. Movements between physiological compartments follow chemical laws, almost always sums of simple exponentials. A careful theoretical study of the compartment problem has been made by Berman at the N.I.H.[12] He has developed a program to handle up to twelve compartments with complete flexibility of interaction and some degree of non-linearity.

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External Ureteral Compression to Identify the Origin of Hematuria

W. M. Hamby (820 S Damen Ave, Chicago) and L. M. Bernstein, *Ann Intern Med* 61:1104-1108 (Dec) 1964

A simple, nonhazardous, clinically practical technique, whereby one or both ureters can be obstructed by external compression, is presented. Using this technique, bilateral renal, unilateral renal, and urinary bladder samples were collected from 11 patients with hematuria. The samples were examined for blood and its presence used to localize the site of bleeding. The source of bleeding then was localized with cystoscopy. Results from the two techniques were compared and show that bilateral renal, unilateral renal, and urinary bladder hematuria can be identified with external ureteral compression.

Imunologic Survey of Patients With Myasthenia Gravis

M. M. Adner et al (USPHS, Harrison and Sennet streets, Boston) *New Eng J Med* 271:1327 (Dec 24) 1964

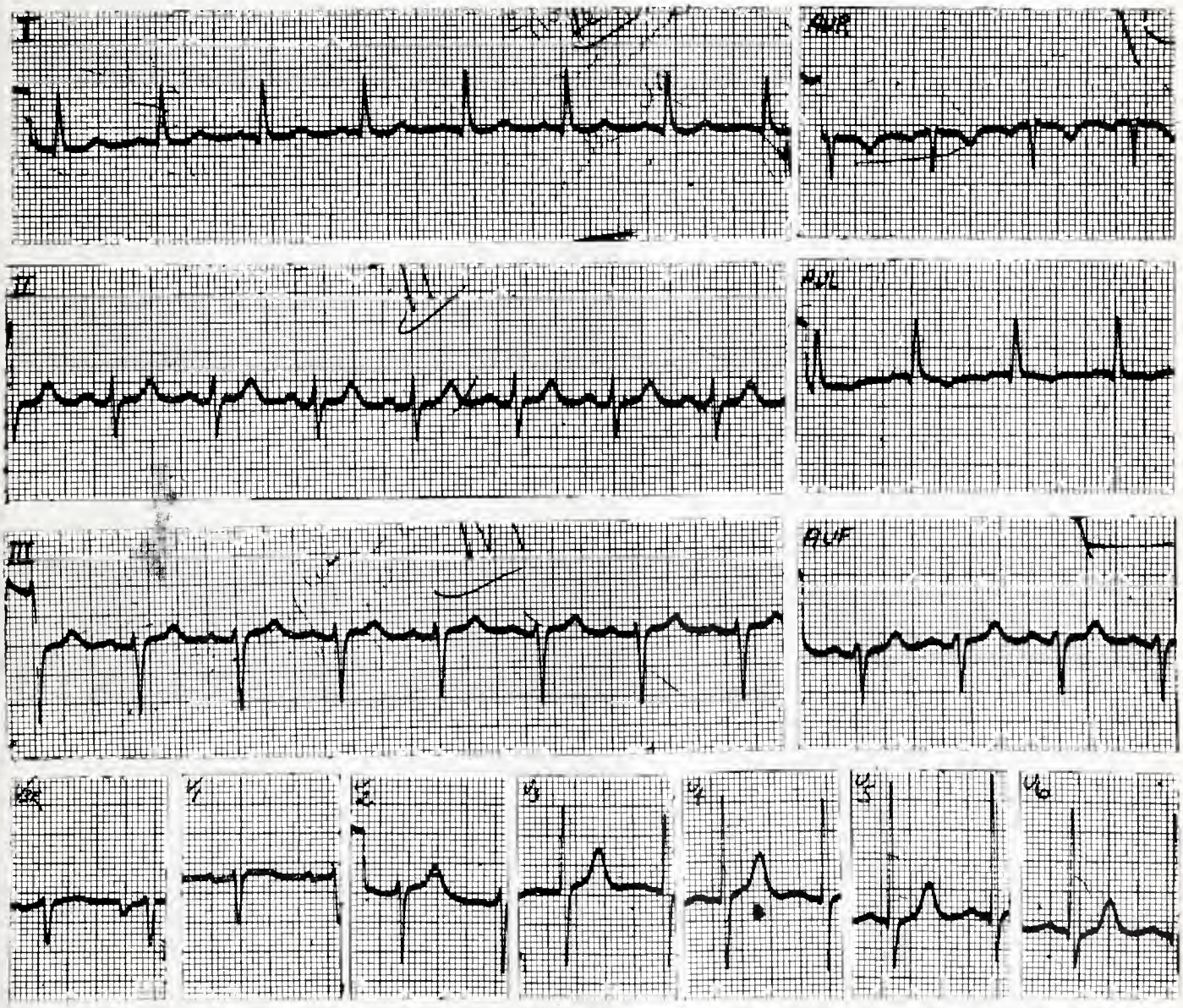
An immunologic survey of 47 patients with myasthenia gravis, both thymectomized and nonthymectomized, revealed a significant incidence of (1) antithyroid, anti-nuclear, and antimuscle antibodies, (2) impairment of delayed hypersensitivity mechanisms, and (3) lumphocytopenia. There was no evidence of impairment in humoral antibody production as measured by response to immunization with plague vaccine. Although there was no correlation between the immunologic abnormalities and thymectomy per se, it is suggested that these abnormalities may in part be due to abnormal thymic function.

ELECTROCARDIOGRAM OF THE MONTH

WHAT IS YOUR INTERPRETATION?

AGE: 105 Sex: F BUILD: Stocky BLOOD PRESSURE: 130/85
CARDIAC DIAGNOSIS: None
OTHER DIAGNOSIS: Possible cerebral ischemia
MEDICATION: Not known
HISTORY: Syncopal Episode

ANSWER ON PAGE 417



The Department of Medicine, University of Arkansas Medical Center
James S. Taylor, M.D., Professor of Medicine

WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

ANSWER ON PAGE 417



No. 20-47-42

16-year-old male

HISTORY: Six months prior to admission the patient developed pain and swelling in the left knee which he attributed to an injury.

ENTEROVIRUS INFECTIONS

Particularly of interest to the private physicians are the "Enteroviruses", which include the polioviruses; the Coxsackie viruses, groups A and B; and the ECHO (enteric cytopathogenic human orphan) viruses. Their symptomatology includes not only respiratory and neural features but enteric manifestations as well.

The jacket of a late book about the newer virus diseases includes the following statements: "There have been many recent contributions to our fundamental knowledge of acute respiratory infections—especially those caused by newly discovered viruses. The practicing physician is no longer content to diagnose these ever-present diseases as 'tonsillitis', 'the flu', or 'the virus that's going around'. The intelligent management of the patient's illness depends on accurate diagnosis."

Enteroviruses are especially of note to the practitioner because of their etiologic role in the so-called aseptic meningitis cases as well as paralytic and nonparalytic poliomyelitis cases. In this group it is well to point out the repeatedly encountering of cases in which the only clinical manifestations related to this illness are respiratory symptoms or signs. The alert physician should caution his patients that diseases are transmissible from any of the broad gamut of cases, whether inapparent, mild, or severe, as well as the possible carriers.

Development of practical laboratory assistance invariably has a time lag subsequent to the accomplishments of research. Tremendous advancement in virology has been made since 1898 when, in the words of the eminent virologist, Dr. Thomas M. Rivers, "The filterable-virus area was vigorously initiated by the rediscovery that tobacco mosaic is caused by an agent capable of passing through earthenware filters impervious to ordinary bacteria", although Iwanowski made the original report of his discovery of this important differentiation of size of infectious agents in 1892. MacCollum and Oppenheimer demonstrated that vaccinia virus could be concentrated by centrifugation in 1922, yet it was another six or eight years before much use of this physical characteristic was made by researchers. About 1930 chemical techniques were applied to these agents. Subsequently, chemical and physical characteristics have been attacked by more researchers laying the foundation for the purification and isolation of specific organisms. Thus more specific vaccine production becomes possible. Mutations of enteroviruses apparently are less significant in altering the antigenic structure; thus the efficacy of poliomyelitis vaccine remains more consistent than influenza vaccine (this respiratory virus group is notorious for mutation, even demonstrable during an epidemic).

Obviously with the reduction of cholera and typhoid fever there was a noticeable greater incidence of shigellosis and salmonellosis as an index of fecalization of the community. The same can be said of poliomyelitis decrease following use of the Salk and Sabin vaccines and apparent increase in the aseptic meningitides due to Coxsackie and ECHO viruses. The enteroviruses spread rapidly through a community of susceptibles. Thus the entire family is likely to have the virus. Since the number of inapparent and mild cases greatly outnumbers the more severe cases, underreporting will obviously result and, further, hospitalized cases can under no circumstances give a true indication of the size of an epidemic. The endemicity of the enteroviruses worldwide should therefore be more understandable.

During epidemics of poliomyelitis in the past an increase in the incidence of diarrheal conditions has long been noted. With submission of fecal specimens as promptly as possible after onset, the presence of poliovirus, Coxsackie virus, or ECHO virus has been demonstrated.

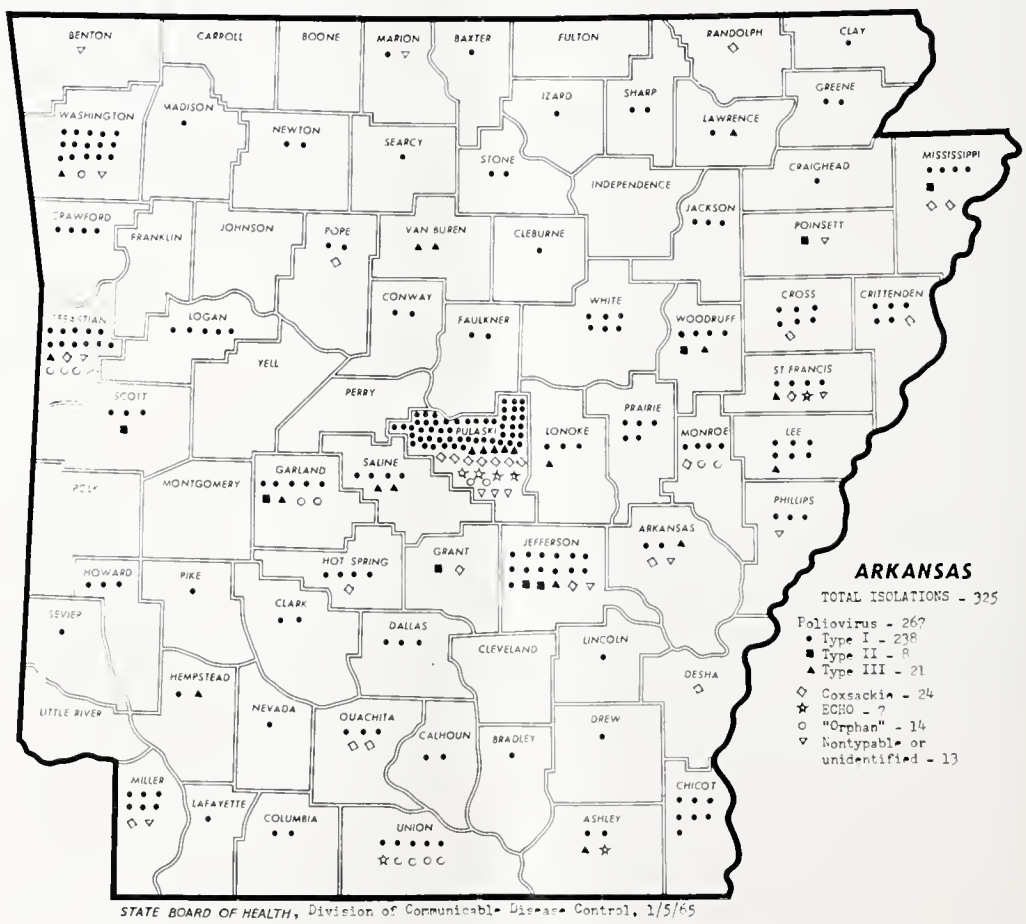
With the advent of poliomyelitis vaccine, submission of fecal specimens in particular was urged. Acute and convalescent blood sera were also requested for complement fixation and neutralization tests after isolation of a specific virus in the stool: that is, poliomyelitis, Coxsackie, or ECHO. Complement fixation and neutralization tests are not ordinarily done until there is an isolate from the fecal specimen.

The Bureau of Laboratories, through its Virus Laboratory being developed at this time, and by submission of specimens to the Public Health Service Laboratory, seeks to be of service to the physicians of the State in selected cases when the fecal specimens are collected at onset and submitted promptly. Use the container for intestinal parasites (*not* the one for bacteriologic culture which has buffered solution in it). Be sure to collect the acute blood specimen at this time and mail to the laboratory for holding.

During the Poliomyelitis Vaccine Field Trials in 1954, in which Craighead, Jefferson, Pulaski, Sebastian, and Washington Counties participated, some isolates were found in specimens from vaccinees and their associates. In Pulaski County, three vaccinees had isolates of poliovirus III, as did an associate of one of the three. Craighead County had isolates of poliovirus I from a vaccinee and one of his associates although another associate in the family had no isolate. Another vaccinee and one of her associates, also in Craighead County, had isolations of poliovirus II. A vaccinee in Sebastian County had no isolate but one of his associates had isolation of poliovirus I; the other four associates were reported as having no isolations. One other Sebastian County vaccinee had an isolation of poliovirus II, with three associates showing none. All specimens (2 vaccinees and 3 associates) in Jefferson County showed no virus present, and no specimens were submitted from Washington County.

During 1955, more laboratory specimens were submitted with isolations as follows out of specimens submitted from 78 of the 170 cases reported after our poliomyelitis vaccination surveillance program began: 14 poliovirus I, one poliovirus II, 7 poliovirus III, and 14 "orphan" viruses. Specimens from 44 reported cases were negative. Sixteen poliomyelitis cases had been reported before inauguration of the surveillance program,

VIRUS ISOLATIONS 1955-1964



STATE BOARD OF HEALTH, Division of Communicable Disease Control, 1/5/65

making a total of 186 cases for the year. It is interesting to note that of the 14 "orphan" virus isolations, 10 were found in cases reported as nonparalytic poliomyelitis and four as paralytic cases. Poliovirus I was isolated also in stools of two contacts and "orphan" virus in two other contacts. The most significant rise in titer (12 to 1024 in both types I and III) occurred in a paralytic case with negative stools. (In these earlier cases involving vaccinees and contacts, tests were done on both stools and paired bloods.) There were also significant blood levels for types I and III in a paralytic case with untypable ("orphan") virus in the stool.

During 1956, stools from 66 patients, out of 222 reported poliomyelitis cases, showed the following results: poliovirus I in 42 patients; poliovirus II in 3 patients, poliovirus III in 4 patients, Coxsackie B_4 in one patient, nontypable virus in 3 patients, and no virus in 13 patients. No fecal specimens were received from the remaining 156 reported cases.

Isolations of viruses from counties where specimens were submitted are shown on the accompanying map for the years 1955-1964. (The 1954 Field Trial isolations are not shown on the map since only five counties were involved.) The year 1964 had only two isolations of these viruses reported, one Coxsackie B_4 and one unidentified virus, and these were both in Pulaski County. No cases of poliomyelitis have been reported in Arkansas during 1964. Isolations of "orphan" viruses in 1955 were reported because further tests were not done; in 1956 Coxsackie B_4 was isolated and three other viruses were not typed; from 1957 on, Coxsackie and ECHO viruses were identified, but there were still other viruses that were not identified. Of the Coxsackie viruses, A_2 was found in Pope County; A_{10} in Jefferson County; A_{16} in Pulaski and Sebastian Counties; B_2 in Cross, Mississippi, Pulaski, and St. Francis Counties; B_3 in Monroe County; B_4 in Arkansas, Desha, and Pulaski Counties; and B_5 in Crittenden, Grant, Miller, Ouachita, Pulaski, and Randolph Counties. The 4 ECHO viruses in Pulaski County were ECHO 9; the 2 in St. Francis County were ECHO 6; and the one in Union County was not identified except as ECHO.

The Gastriontestinal Lesions and Complications of the Leukemias

J. C. Prolla and J. B. Kirsner (950 E 59th St, Chicago) *Ann Intern Med* 61:1084-1103 (Dec) 1964

The presence and nature of the accompanying gastrointestinal lesions were reviewed in 148 leukemia patients. The frequency of gross leukemic lesions in the gastrointestinal tract was 25%. Mycotic infections occred in 24 patients (16.2%); *Candida* species in 18; disseminated moniiasis occurred in 3 instances. Severe gastrointestinal hemorrhage occurred in 27 patients (18%), and was the cause of death in 8 cases. The most common lesion in these patients was hemorrhagic necrosis of various portions of the gastrointestinal tract. The surgical complications were varied and severe, including four cases of hemorrhagic or gangrenous appendicitis, four instances of perforation of the cecum or terminal ileum, two cases of perforation of liver abscesses; there was one case of peritonitis in severe hemorrhagic proctocolitis. This study emphasizes: (1) the relatively high incidence of leukemic infiltrates of the gastrointestinal tract; (2) the increasing frequency of mycotic infections in patients with leukemia; (3) the importance of gastrointestinal bleeding in patients with leukemia; (4) the growing problem of the gram-negative infections and bacteremic shock; (5) the high frequency of necrotic and hemorrhagic lesions of the gastrointestinal tract, attributable to several factors including shock, use of antimetabolites, corticosteroids, and leukemic necrosis; (6) the relatively high incidence of surgical complications related to the gastrointestinal tract, such as gangrenous appendicitis, perforation of the small or large intestine, and agranulocytic abcesses of the bowel and liver.



EDITORIAL

THE LIVER AND BILIARY TREE

Alfred Kahn, Jr., M.D.

Popper and Schoffner have published another interesting article on the changes in diseased liver cells visible by electron microscopy. (Annals of Internal Medicine, Vol. 59, p. 674, Nov. 1963). The authors stress the difficulty of avoiding artifacts due to the small sample of tissue. Yet it is amazing the changes that can be detected in the cell structures and how blind conventional light microscopy is to the changes.

The authors have been able to ascribe functions to the fine structures inside the cell by relating electron and light microscopy by setting up experimental models, by using histo and immuno chemistry, and by breaking a group of cells up into layers containing predominantly one organelle by ultracentrifugation.

Popper and Schoffner state that the liver cell nucleus have a double membrane with pores. The mitochondria, the site of energy releasing enzymes are also in a double envelope. The endoplasmic reticulum is often lined by ribosomes where protein is synthesized. The reticulum without ribosomes is conceived with detoxification, glucose metabolism, and cholesterol metabolism. The golgi apparatus pertains to bile metabolism. There are pericanalicular dense bodies which are thought to contain lytic enzymes which act as the cells scavengers. The cell membranes are straight between adjourning cells but they are thrown up into microvilli facing tissue spaces and on the surface of the bile canaliculi.

In hepatitis, they report that the main alteration is in the endoplasmic reticulum; alterations are visible in the mitochondria in severe cases. Alcoholic hepatitis is said to be characterized by Mallory Hyaline bodies which are swollen clumped mitochondria. Cloudy swelling is due to water accumulating in pinocyte vacuoles. Wilsons Disease shows intracellular pigments and fatty metamorphosis, and occasionally pericanicular dense bodies are increased cirrhosis of the liver was studied particularly with regard to proliferation of bile ductules, mesenchymial reaction, and fibrosis; the proliferating ductules were shown to be a different cell type than the liver cord cell and they are associated with a basement membrane which tends to hinder the free flow of materials; fibrosis tends to start around the ductule's basement membrane; the ductules are also associated with an inflammatory reaction, and these mesenchymal cells probably are responsible for the phagocytic, immuno ocytic, and fibroblastic seen in cirrhosis. Lastly in cholestasis, the bile canicuti are dilated and the microvilli are injured; this is associated with injuries of the organelles having to do with bile excretion, particularly the golgi apparatus.

Edmondson, Peters, Reynolds, and Kuzma (Annals of Internal Medicine, Vol. 59, p. 646, Nov. 1963) have described the clinical picture in a group of cases which they call Sclerosing Hyaline necrosis of the liver. The clumping of mitochondria to form hyaline bodies in the liver cells of alcoholics has been noted for years although the origin of the hyaline was unknown. The accompanying clinical picture has certain characteristics which Edmondson, et al. have elaborated. They studied 19 cases characterized by leukocytosis, fever, abdominal pain, hepatomegoly, and abdominal tenderness. It is of interest that 5 of these seriously ill patients did not have jaundice, thus producing difficulty in diagnoses. Pain was severe enough so that laparotomy was performed in 3 cases. Ascites may be present. The alkaline phosphatase blood test tended to be elevated and

the serum albumen was usually low. Serum Transaminase tests showed only moderate elevation. The differential diagnoses presents problems as the pain may be so severe as to simulate an acute surgical abdomen. The histogenesis is reported as follows: hydropic degeneration of the liver cells, followed by alcoholic hyalin formation in the protoplasm, and hyperchromatic changes in the cell nucleus. Leukocytosis appears, later cell death and shrinkage; collagen proliferation occurs and most extensively in the central sinusoid area. Liver cell regeneration may be minimal. The prognosis of these cases indicates the necessity for their recognition; 15 of 19 patients died.

Wise (Gastro-Enterology, Vol. 45, p. 644, Nov. 1963) has recently reviewed roentgenology of the liver and biliary tract. This subject is of wide interest to all physicians. He reports that all of the current oral gall bladder dye preparations give good opacification. Attention is drawn to the fact that bunamiodyl (oribilex) has caused serious toxic renal effects when the recommended dose has been exceeded; this usually occurred when a double dose of dye was administered after failure to obtain opacification; this drug has a much narrower limit of safety than other commonly used oral gall bladder dyes. Intravenous cholangiography is felt to be a safe, well accepted procedure; Wise reports no recent advancements in this field. Oral cholangrography has been successful in some series in as high as 75% of the cases. A method Wise described as giving convincing films is that Salzman in which 3 grams of iopanoic acid (Telepaque) is given for 4 successive days; this usually produces a moderate diarrhoea. Transhepatic percutaneous cholangrography to opacify the biliary true is currently being used to differentiate obstructive jaundice from heptocellular jaundice, although bile peritonitis may occur, fatalities are apparent but rare; the technique consists of pushing a long needle through the abdomen wall and making frequent aspirations as it enters the liver area; when bile is obtained, the duct is aspirated and dye is injected and filmed. Operative cholangrography when supplemented by direct visualization of the common duct by a choledochoscope would seem to be a worthwhile advance; Polaroid film is now being used and offers rapid development and good detail.

ANSWER—What's Your Diagnosis?

DIAGNOSIS: Primary Reticulum Cell Sarcoma of Bone.

X-RAY FINDINGS: There is irregular, ragged bone destruction involving the upper one-third of the tibia. The cortex is destroyed along the upper medial border and there is periosteal proliferation along the shaft. The findings are typical of, but not definitely diagnostic of, reticulum cell sarcoma. Osteogenic sarcoma and Ewing's tumor may give the same findings.

ANSWER—Electrocardiogram of the Month

INTERPRETATION:

INTERPRETATION: Rate: 90 Rhythm: Sinus

PR: .17 QRS: .08 QT: .40

Within normal limits. No definite abnormalities are present.

COMMENT: This tracing was of interest because of the age of the patient.

MEDICINE IN THE NEWS

Dr. Saltzman Is Officer of Health Council

Dr. Ben N. Saltzman of Mountain Home, Arkansas, was elected vice chairman of the Council on Rural Health of the American Medical Association at a meeting held recently at Chicago.

Dr. Saltzman has also been active in the cancer control program since 1957, and he received the American Cancer Society's Sword Emblem on January 18, 1965.

Physician Attends Chicago Sessions

Dr. John F. Guenthner, a member of the Arkansas State Medical Board of Examiners, attended the Federation of Medical Boards of the United States meeting February 6-9 at Chicago. Instruction was given in improving examination techniques and disciplinary factors. The meeting was held in conjunction with the annual Congress of Medical Education of the American Medical Association.

New Pathology Diplomates Announced

The names of 309 recently certified diplomates in Pathology have been announced by the American Board of Pathology. The Arkansas physicians who were recently certified as Diplomates of the American Board of Pathology are as follows: Glen F. Baker, M.D., St. Bernard's Hospital, Jonesboro; Mary E. Richardson, M.D., University of Arkansas, Little Rock, Arkansas; and Joseph Song, M.D., University of Arkansas, Little Rock.

Faculty of University of Tennessee College of Medicine

Dr. James N. Etteldorf, professor of pediatrics, has been elected president of the faculty of the University of Tennessee College of Medicine. He succeeds Dr. James W. Pate, chairman of the section of thoracic surgery. Dr. Roger T. Sherman, associate professor of surgery, is the new vice president. Dr. Glenn E. Horton, instructor in medicine, was re-elected secretary. This group acts as a forum for the faculty in which all problems of medical education are discussed and recommendations made to the administration.

Memorial and Honor Fund, University of Arkansas School of Medicine

Dr. C. Lewis Hyatt, Monticello, Arkansas, has initiated a fund to be known as the Memorial and Honor Fund, University of Arkansas School of Medicine, as a memorial to his brother and associate, the late Dr. Robert F. Hyatt, Jr. His suggestions concerning this Fund are as follows:

(1) The Fund to be used to memorialize or honor Faculty members, Physicians, Alumni, Students, Friends, or Family.

(2) To be used for direct benefit of the Medical School or Hospital. Possibly alumni or friends of the schools of Pharmacy, Nursing, and Technology might also initiate such a Fund.

(3) Funds are to be used for needs not covered by the regular budget or where the budget is not sufficient such as, replacement or repair of worn or obsolete equipment, purchase of new or special equipment for special programs, lectures, or in any way the Dean of the Medical School and Vice President in Charge of Health Services may see fit.

(4) An account should be kept and published in appropriate places at designated intervals, such as, in the Journal of the Arkansas Medical Society and the Alumni publications.

(5) Donors and family of those memorialized or honored should receive acknowledgment.

Primarily, this Fund would serve to represent the moral support of the Medical Center by mem-

bers of the Arkansas Medical Society, Alumni of the School and friends. Secondly, it is to be hoped that an accrual of such nominal gifts as this could lead to a resource which might accomplish some useful and desirable objectives.

REPORT ON ACTIONS OF THE HOUSE OF DELEGATES AMERICAN MEDICAL ASSOCIATION SPECIAL SESSION

February 6-7, 1965

Chicago

CHICAGO, Feb. 7—Meeting in a two-day special session here to review current health care legislation, the House of Delegates of the American Medical Association gave unanimous approval and support to the AMA Eldercare Program and to the Herlong-Curtis Eldercare bill (H.R. 3727), which embodies the basic principles of the AMA program.

In acting upon six resolutions and reports from the AMA Board of Trustees, Council on Legislative Activities and Council on Medical Service, the House of Delegates also:

1. Reaffirmed its opposition to the King-Anderson bill (H.R. 1 and S. 1) and all similar measures;

2. Commended the Board of Trustees and its Task Force for implementing and funding a program of public education on the AMA Eldercare Program and gave them a standing vote of confidence;

3. Called for study of the "desirability and feasibility of extending the principle of federal and state aid under the Kerr-Mills principle to persons below the age of 65 who need help";

4. Adopted a statement on Standards for Health Care Programs, and

5. Urged that the professional services of pathologists, radiologists, psychiatrists and anesthesiologists should be excluded from the provisions of any bill which excludes other physicians' services.

AMA Eldercare Program

First announced on January 9 by AMA President Donovan F. Ward, at the Association's Kerr-Mills Conference in Chicago, the AMA Eldercare Program would encourage the use of voluntary health insurance or prepayment plans in the implementation of Kerr-Mills programs, permit the state to have a health-oriented agency supervise or administer the program, provide for use of an income information statement as the sole eligibility test of need, and provide for a wide spectrum of medical, surgical and hospital benefits with sliding-scale eligibility so that a citizen 65 and over would pay all, part or none of the cost of the insurance or prepayment policy, depending on his income.

The Eldercare Bill

These principles are incorporated in the Eldercare Act of 1965, introduced on January 27 by Representatives A. Sydney Herlong, Jr., (D., Fla.) and Thomas B. Curtis (R., Mo.), amending the Kerr-Mills law to authorize broad health insurance coverage for elderly persons.

The Herlong-Curtis bill would authorize federal grants to the states on a matching basis to help persons 65 years of age and older pay the costs of the health insurance or prepayment policy if they could not afford it otherwise. The bill would provide for utilization of Blue Shield and Blue Cross plans and private health insurance companies.

The cost of such coverage would be borne entirely by government for those elderly individuals whose income falls below limits set by each state. For individuals with incomes between the minimum and a maximum, government would pay a part of the cost on a sliding scale according to income. Individuals with income above the maximum would pay the entire cost, but they would have the benefits of an income tax deduction for such payments.

Person under 65 years of age also would be given an income tax deduction for the amount of premiums paid on health insurance policies for elderly relatives.

Dr. Ward's Address

Condemning the King-Anderson bill and urging support of the Eldercare program, Dr. Ward told the House on the first day of the Special Session:

"Are 200,000 doctors wrong in urging the Congress to give serious consideration to the one measure now before it that offers genuine medical and hospital benefits to the needy aged? This is a bill authored neither by the Republican party nor the Democratic party. It is a bill with bipartisan parentage—the Herlong-Curtis Eldercare bill, numbered H.R. 3727. We urge Congress to compare, and the people to compare, this bill with its genuine benefits and realistic financing —and with its provision allowing for administering a health program through health agencies of

the states—to compare it feature-by-feature with Medicare.

"If the drums can be stilled long enough to make this comparison, it will be found that the Herlong-Curtis Eldercare bill can cover not only the cost of hospital care and nursing homes for the aged, but also payment of physicians and surgical and drug costs—which Medicare would not do."

Dr. Ward declared that "it is never too late to pass good legislation and defeat bad legislation. The one thing in this historic decision—the only thing—that may truly come too late, is regret."

Education Program

Dr. Percy E. Hopkins, Chairman of the Board of Trustees, reported to the House that the AMA's current effort to tell its story to the people and to the Congress is being financed through the allocation of a portion of the Association's reserve fund. In response to a number of questions raised during the open discussions, the delegates also were told that the education program will not require a dues increase or a special assessment. The program will be national in scope—involving magazines, radio and television—but maximum grass roots effort was urged upon the entire AMA membership and the Woman's Auxiliaries.

Health Care Legislation

Declaring that "it is essential that the position of the AMA be made clearly apparent while at the same time remaining responsive and flexible in legislative developments," the House passed a resolution reaffirming earlier positions established on federal medical care programs.

Specifically included was the reaffirmation of the policy established by the House of Delegate at the 1964 Clinical Convention, which urged component associations to stimulate state and local governments to seek the fullest possible implementation of existing mechanisms, including the voluntary health insurance principle, to the end that everyone in need, regardless of age, is assured that necessary health care is available.

The House defeated a motion that "a medical and hospital service plan with minimum benefits specified, one and the same across the nation from the point of view of the benefits offered, be prepared to accompany H.R. 3727" (the Herlong-Curtis Eldercare bill).

The House tabled that portion of the Reference Committee on Legislation and Public Relations Report dealing with Resolutions No. 3 and No. 5, both of which called for the AMA to propose legislation which would extend health insurance coverage to all *needy* persons regardless of age.

In considering this proposal, the House adopted Resolution No. 7, introduced by California, one portion of which asked that "the AMA Board of Trustees, the Council on Medical Service and the Council on Legislative Activities (a) study the desirability and feasibility of extending the principle of federal and state aid under the Kerr-Mills principle to persons below the age of 65 who need help and (b) report their recommendations as early as possible to the AMA Board of Trustees and House of Delegates as a basis for formulation of future AMA policy in this regard."

After adopting the California resolution, the House voted not to "lift from the table" the portion of the Reference Committee Report dealing with Resolutions No. 3 (Indiana) and No. 5 (Michigan).

Standards for Health Care Programs

The House adopted the following principles as essential to sound health care programs:

1. No person needing health care shall be denied such care because of inability to pay for it.
2. It is appropriate that government revenues be used to finance health care when other resources have been found to be inadequate.
3. Every level of government (municipal, county, state and federal) should assume a responsible share in the financing of such programs.
4. The health care provided by such programs should be adequate and should be equal in quality to that available to those who can afford to pay.
5. Maximum use should be made of voluntary prepayment and insurance mechanisms.
6. Administration of such a program should be the responsibility of the state government. Participating states should be required to meet adequate standards of administration in order to qualify for federal funds.
7. Eligibility requirements for benefits should be fair, realistic, uncomplicated and practical.
8. Any such health care program should provide funds only, and not direct services.
9. Funds for such programs should come from general tax revenues and not from Social Security taxes.

Medical Service Report

In approving the report of the Council on Medical Service, the House adopted the following

statement:

"The Council believes it is important for the profession to note, that while suggested mechanisms for providing health care to the needy have changed as the nation's social and economic structure has changed, the basic underlying concepts of the American Medical Association, upon which our policy statements have been made, have not changed.

"While the Council is concerned with the availability and accessibility of health care for all citizens, it has long recognized that certain groups have health problems disproportionate to those of the general population. Included are the impoverished of all ages—the mother and newborn, the crippled child, the blind, the mentally ill, the mentally retarded, the long-term chronically ill, the physically disabled, and the aged."

F. J. L. Blasingame, M.D.
Executive Vice President
American Medical Association

THE MONTH IN WASHINGTON

The American Medical Association has urged that Congress approve the Herlong-Curtis Eldercare bill (H.R. 3727) as the best answer to the problem of providing medical care to people over 65 who need help in paying hospital and doctor bills.

In testimony presented at a closed hearing of the House Ways and Means Committee, representatives of the AMA also reaffirmed the Association's opposition to the King-Anderson bill, known as Medicare.

The Herlong-Curtis Eldercare bill, incorporating recommendations of the AMA, was introduced by Rep. A. Sydney Herlong, Jr., (D.-Fla.) and Rep. Thomas B. Curtis (R., Mo.).

The AMA was represented before the House Committee by Donovan F. Ward, M.D., Dubuque, Iowa, the Association's president; F. J. L. Blasingame, M.D., AMA executive vice president, and Frank Coleman M.D., Des Moines, Iowa, past chairman of the AMA Council on Legislative Activities.

The bi-partisan Herlong-Curtis bill, entitled the Eldercare Act of 1965, would amend the Kerr-Mills law to authorize broad health insurance coverage for elderly persons. It would authorize federal grants to the states on a matching basis to help persons 65 years of age and older pay costs of the health insurance if they could not afford it otherwise. The bill would provide for utilization of Blue Shield and Blue Cross plans and private health insurance companies.

The cost of such coverage would be borne entirely by government for those elderly individuals whose income falls below limits set by each state. For individuals with incomes between the minimum and a maximum, government would pay a part of the cost on a sliding scale according to income. Individuals with income above the maximum would pay the entire cost, but they would have the benefits of an income tax deduction for such payments, as well as statewide bargaining for non-cancellable health care policies.

Persons under 65 years of age also would be given an income tax deduction for the amount of premiums paid on non-cancellable health insurance policies to become effective upon retirement.

States could administer the program under state health departments if they so chose. The Kerr-Mills program now is administered by state welfare departments.

Both Herlong and Curtis are members of the Ways and Means Committee which made health-care-for-the-elderly legislation its first business of this session.

In a joint statement when they introduced the bill, Herlong and Curtis said:

"Our legislation is designed to provide elderly persons all the medical services they require, in contrast to the limited benefits in the King-Anderson social security tax bill. Under our bill, workers would not be taxed to pay for hospitalization of those who are financially able to pay for it themselves.

"This legislation would not endanger the solvency of the social security fund or permit control of local hospitals by a federal bureaucracy, as the King-Anderson proposal could.

"This bill goes to the real problem: helping those who need help in financing their health care. That problem would still remain after these individuals had used up the limited benefits of the King-Anderson bill. Why levy a new tax and set up another federal bureaucracy when it will not do the full job?"

Identical bills were introduced by a number of senators and other members of the House, including Rep. Durward G. Hall (R., Mo.), who also is a member of the AMA House of Delegates.

The AMA representatives pointed out that the Eldercare bill was designed to provide the elderly

who need financial assistance with a wide range of hospital and medical benefits—far more than the limited benefits Medicare would provide.

Under the Herlong-Curtis Eldercare bill, the amount of financial assistance given to the elderly would be determined by the amount of help required, the AMA noted.

The Eldercare plan would expand and enlarge on the existing Kerr-Mills law, preserving state control over administration and requiring no new payroll taxes on wage earners, the AMA said.

They pointed out that Medicare benefits would be restricted to limited hospitalization, some nursing home care in some nursing homes, some hospital-connected diagnostic services, and home nursing care.

They said all these benefits would be provided under the Eldercare program. But in addition, they said, Eldercare would provide the services of physicians and surgeons, drugs outside the hospital as well as in the hospital, diagnostic services whether connected to hospitalization or not, and other medical services which Medicare would not provide.

They also pointed out that Medicare would impose higher payroll taxes on workers and employers for a centralized, federally-controlled program which would provide benefits to everyone over 65, the wealthy and well-off as well as the needy.

At the request of the Johnson Administration, which is pushing the King-Anderson medicare legislation, Rep. Wilbur D. Mills (D., Ark.), chairman of the Ways and Means committee, introduced a sweeping bill (H.R. 3699) that would consolidate the federal-state medical programs and extend Kerr-Mills medical benefits to needy children under 21 years of age and their parents.

The Administration bill also would require states to follow a flexible income test to determine Kerr-Mills eligibility and to provide specified minimum medical services. These minimum services would include inpatient and outpatient hospital services, other laboratory and x-ray services, nursing home care and physicians' services "in the (physician's) office, the patient's home, a hospital, or a skilled nursing home."

Dr. Ward told the Ways and Means Committee that the AMA opposes the King-Anderson medicare bill (H. R. 1) because it "would be unpredictably expensive."

"It is unnecessary," he said. "It would represent a dangerous venture by the federal government in the field of health care.

"Enactment of this program would impose an unfair burden on the nation's wage-earners and their employers to finance health care benefits for millions of older Americans who are self-supporting, even wealthy, and do not need government benefits.

"Further, government regulation and control which would be established under this bill is not compatible with good medicine. The availability of medical service to the aged could be contingent upon the availability of tax money and not upon the medical needs of older citizens. With quantity thus restricted, quality would inevitably suffer . . .

"We are opposed to government undercutting and disrupting the continuing progress of private health insurance and prepayment plans, on which 145,000,000 Americans of all ages today depend for protection from their illness costs.

"We are opposed to offering false promises to the unfortunate who do need help. This bill would provide only a fraction of the care necessary in any serious illness, a fact which many of our aged do not realize . . .

"From the beginning, our involvement in this issue has been deep and unavoidable. We physicians care for the elderly and know their health needs better than anyone else . . .

"We have pursued for years the goal of finding a means for filling the broad medical needs of older citizens, who need help in financing their health care, while preserving for all Americans the high standards and high quality of our present health care system.

"Out of these efforts of the nation's physicians —during which they examined and rejected scores of tentative proposals—has come a series of recommendations which has found expression in H.R. 3727.

"I say categorically that this bill could provide more benefits for persons over 65 who need health care and cannot pay for it, and at less cost to taxpayers, than any other measure pending before Congress . . .

"Utilizing Blue Cross and Blue Shield and health insurance companies as intermediaries, state governments would be authorized to offer the aged a broad spectrum of benefits, including physicians' care, surgical and drug costs, hospital and nursing home charges, diagnostic services, and x-ray and laboratory fees. These are the com-

ponents which go to make up an individual's total bill for illness.

"H.R. 1 would cover only a small portion of these services . . . It would not cover doctors' services or surgical charges. It would not cover drugs outside the hospital or nursing home. It would offer only a partial answer to any serious illness."



OBITUARY

Dr. William C. Hensley

Dr. William C. Hensley, 42-year-old Charleston physician, was killed in an automobile accident on January 26, 1965. Dr. Hensley had practiced medicine at Charleston for ten years. He was born in San Antonio, Texas.

Dr. Hensley was associated with the Turner Memorial Hospital in Ozark. He was a member of the Franklin County Medical Society, Arkansas Medical Society, American Medical Association, and the Arkansas Academy of General Practice. He was a veteran of World War II, a member of the First Methodist Church, and a member of the official church board. Survivors include his widow, a son and two daughters.

Dr. James Gentry Thomas

Dr. James G. Thomas, a Little Rock neurologist, died in a fire which swept through his home on January 24th, 1965. Mrs. Thomas and their three children also perished in the fire.

A native of Prescott, Dr. Thomas attended Hendrix College and was graduated from the University of Arkansas Medical School. He served his internship at St. Vincents, in Little Rock, and a residency at the University of Arkansas School of Medicine. He trained in neurology at Bellevue Hospital in New York City. He was a member of the Pulaski County Medical Society, Arkansas Medical Society, and the American Medical Association. He was a communicant of St. Marks Episcopal Church. Dr. Thomas is survived by his parents, Mr. and Mrs. Charley Thomas of Prescott, and a sister.



PERSONAL AND NEWS ITEMS

Dr. Rankin Moves to Hamburg

Dr. J. D. Rankin has joined Dr. Charles Hicks in the practice of medicine at the Hamburg Clinic. He formerly practiced at Osceola.

Dr. Smith's Office Damaged by Fire

Dr. John W. Smith's office building at 1415 West Sixth Street in Little Rock was damaged considerably by fire in January.

Dr. Johnston Speaks at Meeting

Dr. O. J. T. Johnston was the guest speaker at the January meeting of the Independence County Historical Society in Batesville. He related some of the many incidents which have happened to him during his more than half a century of medical practice.

Dr. Clopton to Practice in Jonesboro

Dr. Owen H. Clopton has opened offices at 826 Cobb in Jonesboro for the practice of internal medicine. He is the son of Dr. O. H. Clopton of Rector.

Doctors Open New Clinic

Drs. A. R. Hammon, R. H. Langston, and Joe Bill Wilson of Harrison have opened the "Doctors Clinic," a new medical facility on North Spring Street in Harrison. The clinic is located a block from the Boone County Hospital.

Dr. Watson Head Neurological Society

Dr. Robert Watson of Little Rock was elected president of the Neurological Society of America at its eighth annual meeting in San Juan, Puerto Rico in January.

Dr. Morris Observes 90th Birthday

Dr. John W. Morris of McCrory observed his 90th birthday February 6th and he is still in the active practice of medicine. He was graduated from the University of Tennessee in 1900, the year he moved to McCrory.

Dr. Bachman Joins Clinic

Dr. David S. Bachman, formerly of Allentown, Pennsylvania, has joined the Millard-Henry Clinic of Russellville. He had practiced general surgery and broncho-esophagology in Allentown since 1956.

New Clinic for Booneville

Construction began in January on a new medical building to be known as the Facundus Medical Clinic. It is scheduled for completion by June 1, when two physicians will join Dr. Bruce Facundus in the practice of medicine there.

Drs. Gray and Burton Honored

Dr. William E. Gray of Hot Springs and Dr. George C. Burton of El Dorado were made fellows of the American College of Radiology at the group's annual meeting in February.

Dr. Wilson Named to Board

Dr. John H. Wilson of Magnolia has been named to a state board to select physicians to provide treatment for clients of the Arkansas Rehabilitation Service. Dr. Wilson is currently serving, also, as the president of the Board of Trustees of the Southern State College at Magnolia.

Osceola Physicians Attend Meeting

Drs. Eldon Fairley, Julian Fairley, L. D. Massey, George D. Pollock and R. H. Rhodes, all of Osceola, were among approximately 1,000 physicians from seven states who attended the 76th annual meeting of the Mid-South Postgraduate Medical Assembly at Memphis in February.

Dr. Wright Speaker at Meeting

Dr. Paul O. Wright of Hot Springs spoke at a meeting of licensed practical nurses in February. The topic of his lecture was "The Circulatory System". The closed-chest method of cardiac resuscitation was demonstrated during the program.

Dr. Raley Appointed Assistant Chief

Dr. Burch V. Raley has been appointed assistant chief of the medical service at the Veterans Administration Hospital in Fayetteville. He was transferred from the Little Rock facility to the new post at Fayetteville.

Hospitals Around State Elect Staff Officers

Dr. Keller Lieblong of Conway will serve as chief of staff of the Memorial Hospital, with Dr. Sam Daniel as vice chief. Dr. Robert Benafield is secretary of the staff.

Dr. R. H. Langston has been elected chief of staff of the Boone County Hospital in Harrison. Dr. Van Smith will serve as vice chief and Dr. Joe Bill Wilson as secretary.

Dr. Rex N. Moore of Jacksonville is the new chief of staff of Rebsamen Memorial Hospital. Dr. J. A. Johnson is chief-of-staff-elect for 1966.

The Intrauterine Ring for Conception Control

H. H. Hall et al (Department of Obstetrics, New York Medical College, New York), *Fertil Steril* 15:618-624 (Nov-Dec) 1964

The pregnancy rate for 1,035 women observed for 1,970 women-years was 1.8 per 100 years of use of a stainless-steel intrauterine ring, which is a safe and effective contraceptive device. Approximately 80% of women can tolerate the ring without complication. Subsequent fertility is unimpaired. The incidence of infection is low, as evidenced by clinical and laboratory findings, is related to the material and design of the ring and not to patient selection. There is no evidence that intrauterine contraceptive devices interfere with ovulation, fertilization, or sperm passage, or that they cause abortion. Current studies suggest that the mechanism of action involves some interference with implantation.



PROCEEDINGS OF SOCIETIES

Craighead-Poinsett

Dr. Durwood Wisdom of Jonesboro has been installed as president of the Craighead-Poinsett County Medical Society for 1965. Dr. Don Neblett is president-elect and Dr. H. W. Keisker is secretary-treasurer; both are of Jonesboro.

Boone

Dr. W. A. Hudson of Harrison has been elected president of the Boone County Medical Society for 1965. Dr. Joe Bill Wilson, also of Harrison, is secretary-treasurer.

Sevier

Dr. Frank Daniel has been elected president of Sevier County Medical Society for 1965. Dr. Rodger Dickinson is vice-president; Dr. Bill Dickinson is secretary-treasurer. Dr. Wayne Pullen was elected to serve as delegate to the State Society, with Dr. Rodger Dickinson as his alternate delegate.

Dr. Eugene Joseph was appointed chairman of another polio drive in Sevier County to be held in April and May.

Drs. Rodger Dickinson and Wayne Pullen were appointed to a committee to work out plans for a yearly scholarship fund for local senior high school students to attend a school of nursing.

Greene-Clay

The Greene-Clay County Medical Society, in co-operation with the County Development Council, had a free oral polio vaccine drive in January and February for the citizens of Greene County.

Baxter

Dr. Maxwell Cheney of Mountain Home, president of the Baxter County Medical Society, presented a paper entitled "An Approach to the Treatment of Pyelonephritis" at the regular monthly meeting of the society in January at the home of Dr. Ben Saltzman. Plans were completed by the Society for the mass smallpox immunization clinics to be held in Baxter County in February.

Miller

Dr. Blaise F. Alfano, secretary of the Section on Surgery of the American Medical Association, and executive secretary of the American Society of Abdominal Surgeons, spoke to a meeting of the Bowie-Miller Counties Society in February. His subject was "The Impact of Medicare on American Medicine in 1965". Also attending the meeting were Dr. Randolph Ellis, president of the Arkansas Medical Society, and Dr. Max Johnson, president of the Texas Medical Association.

The members of the Bowie-Miller County Medical Society and their wives had as a guest speaker at a meeting in January, Mr. Aubrey D. Gates of Chicago, director of the Division of Field Service of the American Medical Association. Mr. Gates explained the difference between the King-Anderson Bill and the Doctors Eldercare Program.

Sebastian

The Sebastian County Medical Society, in conjunction with Lederle Laboratories, was host at an all-day symposium on clinical medicine and surgery at the Holiday Inn in Fort Smith in February. This was the second such symposium to be held in Fort Smith and physicians from all parts of Arkansas and eastern Oklahoma attended. The program presented outstanding authorities in medicine, surgery, pediatrics and psychiatry, with emphasis on the recent advances in these fields. Moderators for the program were: Dr. Frank

Lockwood, chairman of the local county society's program committee; Dr. J. F. Kelsey, current president of the local society, and Dr. Everett Moulton, immediate past president of the local society. Speakers included: Dr. Ferdinand E. Greifenstein, Dr. Martin F. Hoffman, Dr. Beverly F. Mead, Dr. Gilbert S. Campbell, Dr. Tague C. Chisolm. Dr. C. R. Ellis, president of the Arkansas Medical Society, was a special guest at the symposium.

Benton

Dr. Grier D. Warren of Rogers is the new president of Benton County Medical Society for 1965. Dr. J. L. Jackson of Bentonville is vice president and Dr. L. G. Pillstrom is secretary-treasurer.



NEW MEMBERS

DR. GEORGE H. BRENNER, JR. is a new member of Pulaski County Medical Society. A native of Hot Springs, he received his preliminary education from Hot Springs High School and the University of Arkansas. He then enrolled at the University of Arkansas Medical School from which he received his M.D. degree in 1958. He served his internship at the University of Arkansas Medical Center. He was in residency training at the University of Arkansas Medical Center from 1960-61, and at the University of Colorado Medical Center from 1961-63. Dr. Brenner served in the U.S. Air Force from 1963-65. His specialty is radiology and his office is at the Arkansas Baptist Hospital in Little Rock, Arkansas.

A new member of Pulaski County Medical Society is DR. ROBERT JACK EARDLEY. He was born at East Liverpool, Ohio, and attended high school there. His pre-medical education was received at Kent State University in Kent, Ohio, and Arkansas State Teachers College at Conway, Arkansas. He received his M.D. degree from the University of Arkansas School of Medicine in 1960. He completed his internship at Arkansas Baptist Hospital in Little Rock. He was in residency training at the Arkansas State Hospital from 1962 until 1963, and at the Menninger Foundation in Topeka, Kansas, from 1963 until 1964. His specialty is psychiatry and Dr. Eardley's office address is 4313 West Markham in Little Rock, Arkansas.

Pulaski County Medical Society announces that DR. REGINALD CARLYLE RAMSAY, JR. is a new member. He is a native of Nashville, Arkansas, and received his preliminary education from the University of Arkansas. His M.D. degree was received from Tulane University in New Orleans in 1953. He served his internship at Colorado General Hospital from 1953 until 1954, and was in the U. S. Air Force from 1953 until 1955. Dr. Ramsay has practiced in Florida and he is now with the Arkansas State Board of Health, Little Rock. He is a pediatrician.

DR. FRANK M. WESTERFIELD, JR. has been added to the roster of members of the Pulaski County Medical Society. He was born at Little Rock, Arkansas, and received his pre-med at Little Rock University and Hendrix College. He then enrolled at the University of Arkansas Medical School and was graduated from there with a M.D. degree in 1953. He completed his internship at Hillcrest Medical Center in Tulsa, Oklahoma, in 1954. He was in residency training at Letterman Army Hospital from 1957 until 1959 and he served in the U. S. Army from 1956 until 1964. Dr. Westerfield's specialty is neuro psychiatry and his office is in the Baptist Medical Arts Bldg., Little Rock, Ark.

DR. FREDERICK D. JARVIS, JR. is a new member of the Pulaski County Medical Society. He is a native of Little Rock, and he received his preliminary education from North Little Rock High School and Harvard College in Cambridge, Massachusetts. His M.D. degree was obtained from the University of Arkansas School of Medicine in 1958, and he completed his internship at Arkansas Baptist Hospital in Little Rock in 1959. He was in residency training at Boston VA Hospital, Boston, Massachusetts from 1959 until 1962.

From 1962 until 1964, he served in the armed forces of the United States. Dr. Jarvis' specialty is psychiatry and he has his office in the Baptist Medical Arts Building in Little Rock, Arkansas.

Pulaski County Medical Society announces that DR. BOB LEON GOSSER is a new member. He was born at Little Rock, and he attended high school there. He then attended Ouachita College in Arkadelphia, Arkansas, from which he received a B.S. degree. In 1960, he received his M.D. degree from the University of Arkansas School of Medicine and in 1961, he completed his internship at the University of Arkansas Medical Center. He completed a pediatric residency at the University of Oklahoma Medical School in 1963. Dr. Gosser's specialty is pediatrics and his office is in Pike Plaza Center in North Little Rock, Arkansas.

A new member of Pulaski County Medical Society is DR. THOMAS JOSEPH SMITH. He is a native of Liberal, Kansas, and received his preliminary education from the University of Oklahoma. His M.D. degree was obtained from the Oklahoma University Medical School in 1959. He served an internship at St. John's Hospital in Tulsa, Oklahoma. Dr. Smith's specialty is internal medicine and gastroenterology and his office address is 500 South University in Little Rock, Arkansas.

Supplemental Report of the Constitutional Revisions Committee

LOUIS K. HUNDLEY, *Chairman*

The following proposed amendments were read for the first time at the first meeting of the House of Delegates during the 1964 Annual Session, were published in the June 1964 issue of the Journal of the Arkansas Medical Society, and will be presented for final action at the 1965 meeting of the House of Delegates.

Amendment No. 1. Amend CHAPTER VIII of the By-Laws, Section 1, Paragraph (A), Subparagraph "3" (Committee on Public Health) to add: Sub-Committee on Liaison with the Nursing Profession

Note: The Society presently has a Council-appointed Committee on Liaison with the Nursing Profession. As a Council Committee, the membership does not change and the committee is not subject to the rules of the committees of the Arkansas Medical Society. The Council and the Constitutional Revisions Committee feel that it is important that this committee be made a standing committee of the Society.

Amendment No. 2. Amend ARTICLE VIII of the Constitution, Section 2 and ARTICLE IX, Section 1 by substituting the words "executive vice president" for the words "executive secretary".

Amend the By-Laws, CHAPTER VI, Section 5, and CHAPTER VI, Section 9, by substituting the words "executive vice president" for the words "executive secretary".



BOOK REVIEWS

EXPERIENCE IN RENAL TRANSPLANTATION, by Thomas E. Starzl, Ph.D., M.D., Professor of Surgery, University of Colorado School of Medicine; Chief, Surgical Service, Veterans Administration Hospital, Denver, Colorado, pp. 383, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1964.

This is a well written book about a comparatively new field, namely, that of transplantation of the kidney. The text is quite complete considering this limited field. There are excellent illustrations and numerous charts. Of particular interest in this book is the chapter on pathological changes in transplanting kidneys. As the book indicates, despite all efforts at this time, a high percentage of these cases are clinical failures—both immediate and late complications kill many of these patients. The number of physicians who will have occasion to actually employ the techniques in this book is somewhat limited but it is of more than passing interest to all physicians. AK

RESPIRATORY FUNCTION IN DISEASE, an Introduction to the Integrated Study of the Lung, by David V. Bates, M.D. (Cantab.), M.R.C.P. (London), Associate Professor of Medicine, McGill University; Director, Respiratory Division, Joint Cardio-respiratory Service, Royal Victoria Hospital and Montreal Children's Hospital, and Ronald V. Christie, M.D. (Edinburgh), M.Sc. (McGill), D.Sc. (London), Sc.D. (Dublin), F.A.C.P., F.R.C.P. (London), F.R.C.P. (C), Professor and Chairman of the Department of Medicine, McGill University; Physician-in-Chief, Royal Victoria Hospital, pp. 566, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1964.

This text is interesting and well written. Of particular interest to the medical student, house staff, and for those not specializing in respiratory diseases, are the first 127 pages. This consists of a glossary of terms commonly in use. There is a discussion of the physiology of pulmonary gases. Lung mechanics are discussed. The affects of the aging process, obesity and exercise are also reviewed. Following this is a rather conventional organization of a group of chapters pertaining to pulmonary diseases, including such things as bronchiectasis, emphysema, sarcoid, pulmonary infections and so on. The book has a moderate number of illustrations, charts and graphs. It has an excellent reference table. The style of writing is interesting and easy to read. The book is fairly inclusive and even includes such things as pulmonary function in heart disease as mitral stenosis. This is an excellent text and is heartily recommended to medical students, house staff and practicing physicians. AK

RESPIRATORY FUNCTION IN DISEASE, D. V. Bates and R. V. Christie, W. B. Saunders & Company, 1964.

Both of these authors are master clinical teachers and both also have contributed original research of lasting importance. Their new book has an excellence which is unusual in any subject area, but rare among books on this subject. It will be received enthusiastically by all serious students of pulmonary disease.

The history of pulmonary physiology is skillfully woven into the successive presentation of each aspect. The elegant section on diffusion is the most comprehensive section in the book comparing results obtained with a wide variety of methods used to measure the diffusing capacity. In contrast, the mechanical properties of the lung are rather briefly considered. The useful life of this book will be greatly extended because of the carefully indexed bibliography of almost twenty-five hundred original articles.

This is a clinical book, well written, and with force. A minimum of scientific jargon is included but the inescapable abbreviations proved inescapable, and may live to distract the casual reader. The overly-conscientious nature of the authors appears in the form of apologies—apologies for not presenting a more complete treatise on this or that disease or phase of disease. But the final result erases any need for apology. The text includes over fifty detailed case presentations illustrating all types of pulmonary disease. These case histories should be especially valuable for those physicians who are not accustomed to interpreting physiologic studies.

The most exciting feature about the book is that it points out more thoroughly than ever before, that clinical studies of pulmonary function are an essential part of good medical care. The authors clearly have separated fact from fancy in the diagnosis and management of pulmonary disease. Their standard of medical care is on display in the book and it is excellent.



Results of Needle Biopsy of the Parietal in 124 Cases

D. E. Jenkins et al (1200 Moursund Ave, Houston)
Arch Intern Med 115:34 (Jan) 1965

Results of 154 parietal pleural biopsies obtained with the Vim-Silverman needle in 124 patients are presented. A definite histological diagnosis was made in 79 (64%) of 124 patients. Tuberculosis was diagnosed in 32 (26%), malignant neoplasm involving the pleura in 14 (11%), actinomycosis in one (0.8%), and nonspecific pleuritis in 32 (26%). Complications were few, morbidity was neglible, and rapidity of diagnosis was helpful in the management of the patients' illness. A histological diagnosis of nonspecific pleuritis should evoke additional diagnostic efforts since nine of 32 patients whose pleura demonstrated such nonspecific changes were eventually shown to have tuberculosis or neoplasm. In 45 (36%) patients, normal pleura or inadequate tissue was reported.

TUBERCULOSIS  ABSTRACTS

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SMOKING AND RESPIRATORY DISEASE

While the causal relationship between smoking and chronic obstructive lung disease has not been established, the evidence at hand incriminates cigarette smoking in the development of chronic bronchitis, frequently the fore-runner of irreversible lung disease.

Cigarette smoking, and to a lesser extent other forms of tobacco smoking, are generally agreed to be associated with mortality from lung cancer. The question is whether there is a cause-effect relationship.

If there is merit to the hypothesis that cigarette smoke, by its effect on the epithelial defenses of the respiratory tract, provides a local environment for carcinogens, it would be meaningful to find that there is an association between lung cancer and chronic nonspecific respiratory disease (asthma, chronic bronchitis, obstructive pulmonary emphysema).

Certain epidemiologic similarities between lung cancer and chronic nonspecific respiratory diseases may be noted from mortality statistics. Both have shown an epidemic increase in Canada, the United States, and England and Wales. Both have a similar urban-rural differential mortality and a predilection for men and for persons in middle age.

RELATIVE RISKS OF RD

The most widely reported prospective studies of smoking have demonstrated that the relative risk of death from the chronic nonspecific respiratory diseases is many times higher in cigarette smokers than in nonsmokers.

Population surveys of chronic nonspecific respiratory disease prevalence have contributed to our knowledge of the relationship of these diseases to current cigarette smoking. Through a standard questionnaire and simple pulmonary function tests, chronic respiratory disease can be identified and classified, and related to other variables under study.

In the 1961 survey of Berlin, N.H., the prevalence of chronic bronchitis was found to increase consistently in men and women with increasing cigarette smoking habits up to a five-fold increase for those smoking more than two packs a day. Similar smoking-intensity gradients of disease were noted for the signs and symptoms of more severe obstructive lung disease.

A number of geographic comparisons of chronic respiratory disease prevalence indicate that differences in population smoking habits parallel differences in disease prevalence. The situation is not so simple. In the Berlin survey the combined effect of *age* and current *cigarette-smoking intensity* was found to have a significant relation to chronic bronchitis and obstructive lung disease. This was observed in men, not in women.

Age-smoking intensity specific rates should probably be used in geographic comparisons, though even this may be inadequate because of observed geographic differences in practices of inhalation and length of cigarette smoked.

The respiratory disease prevalence in Berlin was recently compared with that in a small rural town, Chilliwack, British Columbia. The prevalence of chronic bronchitis in men 25 to 74 was only 21.5 per cent at Chilliwack compared to about 30 per cent at Berlin. When age and cigarette-smoking intensity were simultaneously taken into account, the observed prevalences of chronic bronchitis and obstructive lung disease in Chilliwack were not found to be significantly different from those predicted from the experience at Berlin. Thus, for these two populations surveyed in a similar manner and by the same workers, the urban-rural gradient for the chronic nonspecific respiratory diseases in men can be explained by age and smoking differences.

AGE AND SMOKING FACTORS

This overwhelming contribution of age and smoking to the prevalence of chronic nonspecific

Donald O. Anderson, M.D., *American Journal of Public Health*, November, 1964.

respiratory disease can obliterate a less powerful effect of another variable in studies of small samples. Perhaps a smoker so pollutes the air which enters his tracheobronchial tree that the biological effects of other sources of pollution are not readily apparent.

The question arises whether simple bronchitis is really a disease. Can such a condition, which affects 20 to 40 per cent of the adult American population, be of much pathologic significance? Most persons who have chronic bronchitis and who smoke either lose their bronchitis or have a marked reduction in their daily phlegm when they stop smoking.

This chronic productive cough is related to pathophysiologic changes in the tracheobronchial tree—tobacco smoke interferes with ciliary action, slows the flow of the mucous blanket, and changes the consistency of the mucus. Smoking has been shown to be associated with a hypertrophy of the bronchial mucous glands with cellular abnormalities in the tracheobronchial epithelium which appear to decrease when smoking stops; some cellular changes, however, appear to be related to age, sex, and residence (urban and rural), as well as to cigarette smoking habits.

Though many studies of cigarette inhalation have failed to show any effect on mechanical factors of respiration in healthy subjects, in a recent study, a 25 to 30 per cent decrease in airway conductance has been reported immediately after inhalation of cigarette smoke; this bronchoconstriction occurs similarly in both smokers and nonsmokers, is rapidly reversible and recurs after a second cigarette. The inhalation of a pharmacologically inert submicronic particle can produce this reaction, which is likely mediated through the vagus nerve.

The evidence points to the fact that smoking is the most important, though not the only, factor in the production of simple bronchitis, and that with time bronchial obstruction is produced; initially this obstruction is probably reversible, but with further exposure more serious irreversible obstructive disease of the lung is produced.

From the epidemiologic study at Berlin, it was found that the point at which the relative risk of chronic bronchitis and obstructive lung disease doubled in smokers over that of those who had never smoked cigarettes was somewhere between 3,000 and 6,000 packs of lifetime smoking. This is the equivalent of eight years of smoking at the rate of a pack a day.

At the moment, epidemiologic, pathologic, and physiologic evidence incriminates cigarette smoking in the production of chronic bronchitis, though not solely so, for nonsmokers also have this disease.

What should be the public health action to deal with bronchitis? Certainly, control of air pollution will contribute somewhat. But bronchitis is clearly related to another form of air pollution which is self-induced—tobacco smoking. It seems inefficient to plan an effective control program which does not attack the practice of cigarette smoking first.



Complications Arising in the Course of Thyroidectomy

E. A. Gould (1302 18th St NW, Washington, DC), E. Herich, and I. Brescher, *Arch Surg* 93:81 (Jan) 1965

The complications of 1,000 consecutive thyroidectomies performed by a large group of surgeons over a five-year period are described. There were no deaths. Permanent hypoparathyroidism was evident in 0.6% of all thyroidectomies, and the incidence, when related to total thyroidectomies, was 2.8%. The incidence of recurrent nerve injury of a permanent nature was 0.2%, being one each, following unilateral lobectomy and total thyroidectomy. Severe hemorrhage occurred in 1.1%, and emergency tracheotomy was required on 0.5% of the patients. While the infection rate was 1%, the morbidity incidence was 13.2%. The responsibility of the surgeon to train residents in the proper preparation, the surgical anatomy, and the postoperative management of patients undergoing thyroid surgery is self-evident. Thyroid surgery is safe and can be used with minimal mortality and morbidity for a wide range of disease of the gland. Thyroidectomy offers the best means of permanent cure when patients are properly selected.

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Vol. 61 No. 12

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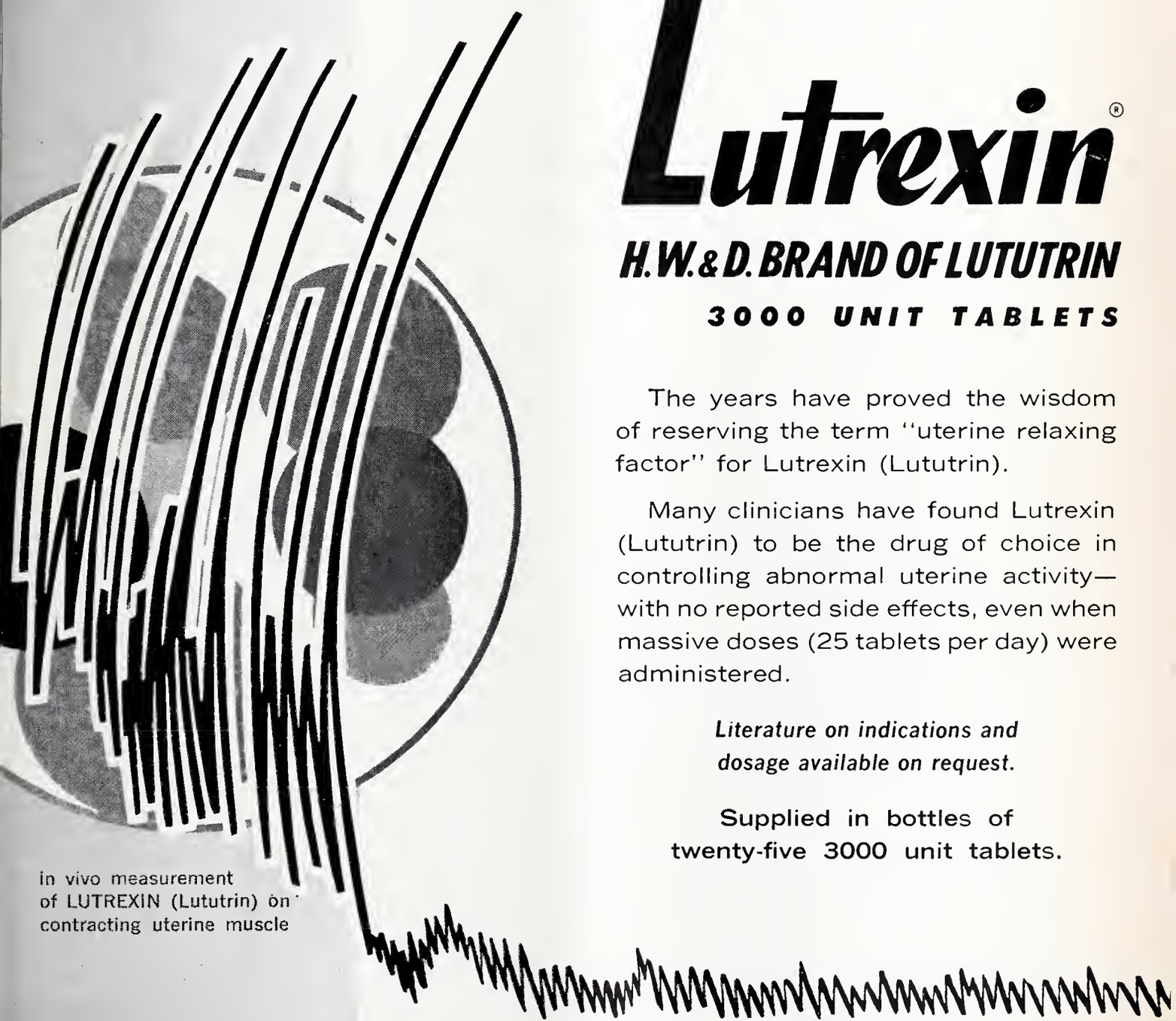
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THE ROLE OF THE REFERRING PHYSICIAN IN ROENTGEN DIAGNOSIS

William J. Tuddenham, M.D.*

I SHOULD LIKE TO BEGIN by presenting to you, briefly, a case that has recently come to my attention. The patient, a woman in her mid-forties had been admitted to the hospital with a chief complaint of dysfunctional uterine bleeding for a diagnostic dilatation and curettage. While in the hospital, she was seen by a consulting gastroenterologist who requested a gastro-intestinal study. What symptoms led to this consultation are not clear, but they are presumed to have been trivial for neither the gynecologist nor the gastroenterologist communicated any history to the radiology department, and neither reviewed the films with the radiologist who examined the patient.

The patient herself told the fluoroscopist, in response to his efforts to obtain a history, that she occasionally felt somewhat distended after eating roughage and was being treated for an irritable colon syndrome. Armed with this information, he interpreted the study as showing no significant abnormalities.

Three months later the patient presented again —this time with clinical jaundice—and the films were reviewed. It then appeared clear that all of the classical roentgen findings of the presence of swelling or a mass in the head of the pancreas had been recorded, but discounted in the initial study. Repeat study showed dramatic progression of the findings, and at surgery two days later an unresectable carcinoma of the pancreas was found. The patient died a few weeks ago, 6 months after exploration, and we had occasion therefore to review the records.

I present this history not to illustrate the roentgen signs of carcinoma of the pancreas, but rather to emphasize that despite its remarkable versatility and usefulness, the roentgen examination is not infallible—a fact of which I am sure you are aware, and of which your radiologist is even more acutely aware. The frequency with which diagnostic details are perceived in retrospect that were discounted in the initial interpretation indicates that our technical ability to record information often exceeds our ability to appreciate and utilize it. That is to say that we do not yet take full advantage of the potential usefulness of the roentgen method. It would clearly be greatly to the advantage of our patients if we were to utilize the information in the roentgenogram more completely, and I submit that this can be done, but only if roentgen diagnosis is approached as a collaborative effort in which the referring physician is just as important as the radiologist. It is, therefore, in the belief that the solution of this problem challenges each of us—regardless of the nature of his practise—that I have elected tonight to discuss with you the role of the referring physician in roentgen diagnosis.

Now, let us consider in what manner the referring physician can best contribute to more effective roentgen diagnosis. I submit that far and away his greatest contribution lies in communication—in writing, 'phoning, or otherwise making available to the radiologist his knowledge of the patient and of the problem at hand. This is scarcely a new concept, and the chances are that most of you subscribe to it wholeheartedly. Nevertheless, the radiologist all too often finds himself interpreting films without an adequate understanding of the clinical problem that has

*Professor of Radiology, School of Medicine and Graduate School of Medicine, University of Pennsylvania and Director, Department of Radiology, Pennsylvania Hospital, Eighth and Spruce Streets, Philadelphia, Penna.

led to the examination. He will almost certainly attempt to get a history himself from the patient, but surprisingly often the patient doesn't know himself what led his physician to request a particular study. Even if he knows, he may be reluctant to discuss his symptoms in a crowded waiting room and most x-ray departments lack space for private conversation or for more than the most cursory physical examination. Finally, ill and apprehensive, the patient is unlikely to give as adequate a history to a stranger—and unfortunately the radiologist is a stranger to most people—as he gave to his family physician whom he may have known for years, and don't forget that the fluoroscopist's red goggles, lead apron and lead gloves do little to restore the patient's sense of security.

Clearly then, the radiologist is dependent in most cases on the information provided by the referring physician for an intelligent understanding of the problem he has been asked to help solve. Many referring physicians recognize this and make an especial effort to communicate the nature of the problem to the radiologist. Others, despite the best of intentions, never quite "get the message through." They make wonderful subjects for the indoor bird watcher. You may recognize some of these species.

There is for example, the Iatromorphic Roadrunner—he is simply too busy to take the time to discuss a problem with the radiologist. There is the Red-quilled Secretary Bird who writes careful histories in red ink forgetting that they are completely invisible to the fluoroscopist whose examination is, therefore, likely to be performed without the benefit of any understanding of the problem. There is his distant relative the Incoordinate Scratcher who writes detailed histories that are totally illegible, and therefore, of equally little value. There is the North American Abbreviator whose histories consist of a challenging succession of seemingly randomly selected letters punctuated only by small arrows that point in various directions. Equally maddening is the Great Bald Obfuscator who records inconsequential facts, but omits critical details of the history. Finally, there is the lovable but almost extinct Potbellied Napcatcher who just never quite gets around to writing a history down.

As you can see, all of these species understand the desirability of discussing their problems with the radiologist, and it is only through haste or oversight that they fail to do so. There is nothing malicious in their failure to communicate with the radiologist. On the other hand, however, there are physicians who in the name of "objectivity" feel it their moral obligation to keep the radiologist as much in the dark as possible. Such physicians I believe misapprehend the function of the radiologist, and their attitude is, I submit, contrary to the best interests of their patients. I feel somewhat evangelical about this concept since the old shibboleth of "objective interpretation" has after several decent burials been resurrected recently, and I should like, therefore, to devote a few minutes to exposing the Myth of Objective Interpretation.

This myth is founded, I believe, on a basic misconception—namely, that the radiologist inevitably perceives the critical shadows recorded in the roentgenogram, but may err in his interpretation of them if biased by a knowledge of the patient's clinical problem. This, to be ornery about it, just isn't so. Error is much more likely to result from our failure to perceive critical shadows than from our failure to interpret perceived shadows correctly.

A number of studies indicate that, where film readers deprived of clinical information read the films with complete objectivity, approximately 25 per cent of significant findings are not perceived —surely a disturbing frequency of error. One may question the wisdom of calling this fact to your attention, but I do so advisedly, heartened by the knowledge that numerous studies of other specialists performing within their areas of competence show them to err with equal or greater frequency. I would refer you to Garland's review of the Accuracy of Diagnostic Procedures in the American Journal of Roentgenology, Radium Therapy, and Nuclear Medicine for July 1959 for documentation of this somewhat surprising fact.

Now you may wonder how it is possible for the trained radiologist to fail to perceive critical shadows so frequently. There are several factors which contribute to this.

First, it is likely that our visual systems act as limited communication channels and transmit only fragments of the shadow pattern recorded in the film to our cortical centers for evaluation. It is theorized that these fragments are completed

from memory and are identified by matching them with traces of prior perceptual experience. This implies that what we "see" is not identical with what is recorded, but is in part constructed by the observer to be as reasonable as possible in terms of previous experience. Lacking specific knowledge of the patient, we are likely to perceive critical shadows as normal findings.

Secondly, we search a film in a quest for meaning, and all our training and experience lead us to attempt to ascribe meaning to a display on the basis of a minimum number of clues. Lacking specific knowledge of the problem at hand, we may ascribe meaning to the film on the basis of photometrically obvious shadows and discontinue search prematurely—overlooking more subtle but diagnostically more significant shadows.

Thirdly, all perception is affected by prior experience and if the observer is not biased by knowledge of the problem under consideration, he is biased by knowledge of a previous case in which the films bore a superficial resemblance to those being interpreted, or by his knowledge of a recent publication. No perception is really completely objective in the sense that it is uninfluenced by prior knowledge. Knowledge of the specific clinical situation that led to the roentgen examination is at least as likely to guide one to a rational interpretation of the films as knowledge of some previous case that comes to mind because of its recency or because of emotional "overtones" that may be attached to it. Objective film-reading is for all these reasons fraught with the possibility of error, and while specific knowledge of "what to look for" may lead us to discount unexpected findings, this appears to be the lesser of two evils.

If the clinical facts are made available to the radiologist, it is perfectly possible for him to study the films initially without knowledge of the clinical problem for whatever merit that system may have, and subsequently to review them in the light of the history presented. This is certainly ideal radiologic practise. Many radiologists make every effort to interpret films in this manner, and where the size of the staff permits, to insure that double reading (one of which is an "objective reading") is carried out. In any event, the ultimate effectiveness of roentgen diagnosis is directly proportional to the amount of information about the particular case that is made available to the radiologist, and it is in providing this information that the referring physician makes his greatest contribution to effective roentgen diagnosis.

Our allusion to double reading as an idealized form of roentgen diagnosis suggests another important contribution that the referring physician can make to effective roentgen diagnosis: that is, the contribution of reviewing the roentgenograms with the radiologist.

Such a review provides the optimum opportunity for communication between the referring physician and the radiologist. This is the ideal opportunity for the referring physician to amplify whatever history he may have provided in advance of the study. By the same token, it is an opportunity for the radiologist to amplify his report citing the many diagnostic possibilities he has weighed and his reason for including or excluding them from his final report. Such considerations are likely to be omitted from written reports for the sake of brevity and clarity, but may give the referring physician a much more complete understanding of the roentgen study and of the diagnostic possibilities than would otherwise be possible.

More than this, however, such a joint review of the films serves in a sense as a double reading. In viewing any visual display, we all—radiologists or not—spontaneously organize the various visual images in to so-called "figure" and "ground." The "figure" we study and analyse carefully for meaning. The "ground" we ignore. We are unlikely to modify this primitive form of organization unless some other pattern of organization is suggested to us. While double reading is most effective if carried out independently by two trained observers, the referring physician may by questioning the significance of shadows that attract his attention, suggest new patterns of image organization and may thus lead to the perception of shadows that have previously escaped the radiologist's attention. In short, the referring physician may lead the radiologist to see the film through another's eyes, to organize the shadows as another would organize them, and this on occasion leads to the perception and evaluation of critical shadows that might otherwise escape at-

tention. Thus, the referring physician's review of the films constitutes another significant contribution to effective roentgen diagnosis.

Now, I should like to say a word about a different sort of contribution that lies within the province of the referring physician. This concerns the utilization of new roentgen technics. The radiologist is necessarily sensitive to your wishes and tries to satisfy them—sometimes against his better judgment—for while the referring physician is often reluctant to accept change in technics with which he is familiar, he is eager to be the first to urge the adoption of newly reported technics. Thus, we find the paradox of the physician who insists on chest films exposed at 69 KV as they were in 1940, but who on the other hand wants lymphangiograms and mammograms performed routinely on his patients a requirement which may be practical by 1970, but certainly isn't now.

I would only suggest that your radiologist is in the best position to evaluate changing technics. For best results, I would suggest that the choice be left to him. No new study is ever as uniformly useful as the initial reports indicate. Moreover, what is done successfully in one laboratory may not yet be sufficiently well standardized to be performed elsewhere with similarly good results. Also, there is the problem of individual differences to be considered. Only one-third of the population can fuse stereoscopic images reliably, for example. The choice between stereoscopic roentgenography and body sections depends, therefore, largely on the skills of the individual radiologist. By the same token, if your radiologist seeks to employ high kilovoltage (100 KV-120 KV) technics for chest radiography, he is not being perverse or giving you bad films. Long experience shows that such technics provide diagnostic information concerning many more structures than do lower voltage studies. In fact only about one-third of the frontal projection of the lungs is recorded adequately in "old fashioned" 60-70 kilovolt chest examinations. In short, discuss your problems with your radiologist, and let him select the technic best adapted to its solution in his hands. His specialized training qualifies him to make this sort of decision. In the best interest of your patient it is well to let him guide you in this area.

Finally, I should like to suggest that the referring physician can contribute greatly to the effectiveness of roentgen diagnosis by reading the radiologist's report with care. All too often, a significant lesion is discovered by roentgen examination and is reported, but definitive management is deferred because the report is lost, or worse yet because the report is received, but not read carefully. Occasionally, on the other hand injudicious management is undertaken because of the referring physician's failure to read an x-ray report with care. I can recall, for example, one patient who was admitted to the hospital and scheduled for surgery for the removal of a colonic polyp on the strength of a report stating that a filling defect in the splenic flexure was probably feces, but might represent a polyp. A repeat barium enema was advised. The surgeon with becoming thoroughness, read the report, repeated the study and discharged the patient when no lesion was found on the second study. The episode which proved to be exceedingly traumatic for all concerned stemmed from the referring physician's hasty and inaccurate reading of the report.

Unduly long reports invite such errors, and it is incumbent on the radiologist to be as specific and succinct as possible. His motivation to write terse lucid reports declines, however, if experience shows him that his best efforts go unheeded.

The problem of reporting roentgen findings is too complex for full analysis here, but it is worth noting that it is not evidence of cowardice or any other defect of character for the radiologist to suggest more than one explanation for the observed findings. Few findings in this world of shadows are completely pathognomic. There are many shades of grey, and it is just as wrong to focus the referring physician's attention on one diagnostic possibility without noting the other equally likely possibilities as it is to confuse him by offering a dozen etiologic possibilities without making any effort to indicate the relative likelihood of their occurrence in the case at hand.

All of these problems are of course most easily solved by discussion and review of the films with the radiologist, as I have previously urged.

In summary then, roentgen diagnosis is a collaborative undertaking which must at all times be guided by the best interests of the patient and which depends equally upon the efforts of the referring physician and the radiologist for its maximum effectiveness. If the roentgen method

is to be as effective as possible, it is for the referring physician to take the time and trouble to provide a succinct but meaningful history to the radiologist stating briefly the pertinent facts of the medical history, the physical examination and laboratory studies, and stating the question that he is interested in resolving. Further, it is for the referring physician to take the time to review the examination with the radiologist. By the same token, it is for the radiologist to select the technic most likely to yield an unequivocal answer in his hands, to perseverate within reason until he gets an answer, and to provide a lucid interpretation of the findings—taking care if at all possible to provide double reading in some form as a guard against oversight and prejudice.

If all of this sounds like something you have heard over and over again in the past, let me suggest that it is sometimes well to restate fundamental truths lest they be forgotten, and let me remind you that the most popular girl in the disorderly house was the ex-school teacher who, from force of habit, always admonished her "clients" to "do it over and over again until you get it right."

Fuchsinophilia in Rheumatic Myocardial Degeneration
Microscopic Reading of the RA TEST

E. S. Gulyantz (Medical Institute of A. M. Gorkij, Donets, USSR), *Arkh Pat, Moscow* 26:18-23 (Nov) 1964

On the basis of the material of 26 hearts of persons who died of active or inactive rheumatic fever, a study was made o fthe fuchsinophilia of the muscular fibers by the application of the Selye method for myocardial staining. Myocardial fuchsinophilia of the muscular fibers by the application of the Selye method for myocardial staining. Myocardial fuchsinophilia revealed degenerative changes leading to a prenecrotic state in most hypertrophied muscular fibers near the foci of the inflammation and sclerosis. A discussion is presented of the role of necrotic changes in the muscle fibers leading to postnecrotic sclerosis. A discussion is presented of the role of necrotic changes in the muscle fibers leading to postnecrotic sclerosis, which in turn leads to the onset of cardiac insufficiency.

Treatment of Acute Leukemia With Divided Doses of Methotrexate

C. M. Huguly et al (W. R. Vogler, 740 Woodruff Ave, Atlanta) *Arch Intern Med* 115:23 (Jan) 1965

Twenty-four adults with acute leukemia were treated with divided, daily oral doses of methotrexate in five day courses repeated at intervals of 10 to 14 days. The dose varied from 1.25 mg to 3.75 mg every six hours. Toxicity was often severe, characterized by stomatitis, nausea, gastrointestinal hemorrhage, and severe marrow depression. The recovery from toxic effects was very rapid. Definite improvement was seen in 46% of patients, and complete remissions occurred in 33% of patients. Remissions were delayed in some patients until three courses had been given. Patients living long enough to receive three courses of methotrexate had a complete remission rate of 47%. The duration of remissions averaged 98.5 days. The divided, daily dose schedule proved to be a safe and effective method of treating patients with acute leukemia.

Annual Report to the Arkansas Medical Society from Arkansas State Board of Health

Fiscal year 1963-64

J. T. Herron, M.D.
State Health Officer

Bureau of Vital Statistics
Calendar Year 1963

A TOTAL OF 41,846 CURRENT births were recorded during the calendar year 1963, representing a rate of 23.4 per 1,000 population. A total of 19,492 deaths were recorded, representing a rate of 10.9 per 1,000 population. Also, a total of 947 fetal deaths were recorded, representing a rate of 22.7 per 1,000 live births.

The ten leading causes of death for 1963 were as follows:

Cause of Death	*Total*	*Rate Per 100,000 Pop.*
1. Heart disease (all forms)	7,772	435.1
2. Cancer (all forms)	2,752	154.1
3. Vascular lesions affecting central nervous system (stroke)	2,594	145.2
4. Accidents (all forms)	1,314	73.6
5. Pneumonia & influenza	854	47.8
6. Diabetes mellitus	284	15.9
7. Birth injuries, asphyxia & infections of newborn	265	14.8
8. Nephritis & nephrosis	232	13.0
9. Diseases of liver, pancreas, & gallbladder	228	12.8
10. Tuberculosis (all forms)	218	12.2

Bureau of Laboratories

Diagnostic laboratory services for many diseases of public heath significance are provided for private physicians and local health departments. Tuberculosis, venereal diseases, typhoid fever, dysentery, fungus diseases, intestinal parasites, diphtheria, viral infections, tularemia, and brucellosis are all included. There is no charge for any of the laboratory services.

A new test for rabies was begun in late January of this year. It is known as the Fluorescent Antibody Test for Rabies Virus, but is commonly called the FA test. It takes longer to do and requires a dark room and special equipment but, when carefully and accurately done, is a more specific and reliable test than the microscopic examination of brain tissue for Negri bodies alone. The FA test is now being done about twice each week on all animal brains. From late January until July first, 546 animals were examined by both methods. Of this number, 17 were found to be positive for rabies with the FA test and negative by the ordinary examination. It seems to be especially useful in the examination of skunks and cattle. Of the 17 animals, skunks accounted for 8 and cattle for 6. There were 1 dog, 1 cat, and 1 raccoon.

Division of Hospitals and Nursing Homes

During the 1963-64 fiscal year the Division of Hospitals and Nursing Homes licensed 132 hospitals and infirmaries and 153 nursing homes.

The Hill-Burton Program in Arkansas is administered by the Division of Hospitals and Nursing Homes under the supervision of the State Health Officer.

Projects under the Hill-Burton Program:

	No.	Total Cost	Federal Share	Beds
Hospitals completed	9	$ 2,713,138.16	$1,521,161.46	153
Hospitals under construction	18	12,633,078.38	6,292,841.32	517
Nursing homes completed	4	899,359.11	592,108.48	90
Nursing homes under construction	6	3,177,106.12	2,108,070.75	293
Privately Financed:				
Nursing homes completed	34	(No figures available to this office)		1734

The number of patients admitted to the general and maternity hospitals during the year was 276,232. This was an increase of 12,438 patients admitted to hospitals over the number admitted the previous year. The number of patients admitted represents 1,724,485 patient days, which reflects an increase in hospital usage over last year of 111,342 patient days.

Division of Health Mobilization Planning

Medical Self-Help

To date this year 8,963 persons have been trained in Medical Self-Help.

Emergency Hospitals

On January 1, 1964, by mutual agreement between the Arkansas State Health Department and the State Civil Defense Agency, responsibility for the sixteen 200-bed emergency hospitals prepositioned in the State was transferred to the Health Department.

A Stateline Training Program on emergency health and medical services and on the utilization of the 200-bed emergency hospital was conducted on May 13-14, 1964, by the State Health Department.

Division of Communicable Disease Control

Two of our notifiable diseases once prevalent are practically nonexistent. Smallpox has not occurred in Arkansas since 1948 when only one case occurred. (There were 842 cases in 1920.)

Malaria has not been proved as locally transmitted since 1949, this attributable to improved sanitation. Whereas 8,479 cases of malaria were reported in 1920, only one occurred in Arkansas each of the past two years, and both of these were acquired outside the United States.

Poliomyelitis, from a high of 992 cases reported in calendar year 1949, dropped this fiscal year to a low of 3 cases, 2 paralytic and 1 nonparalytic, all of which occurred in the last six months of 1963.

Diphtheria and tetanus are other diseases which have almost disappeared as the result of concentrated efforts toward better immunization by the use of diphtheria-tetanus toxoids. While diphtheria cases have dropped from 11 to 3 this year, tetanus cases have increased from 7 to 10.

Immunization Program Activities

The Vaccination Assistance Program was begun on January 1, 1964. The purpose of this program is to assist communities in carrying out intensive vaccination programs to protect their populations, especially all children under the age of five, against poliomyelitis, diphtheria, whooping cough, and tetanus.

The following ancillary activities are expected to help improve immunization levels of protection among adults:

1. Several community organization specialists have been employed to offer complete education and information assistance to locally conceived and sponsored programs.
2. Sampling surveys (similar to Gallup polls) have been conducted in ten counties of the State to determine levels of protection by age groups.

Division of Veterinary Public Health

To date in 1964, 142 cases of animal rabies have been reported to the State Health Department. Rabies was reported and confirmed in the following species of wildlife in large numbers: skunks, foxes, and bats. As usual, considerable loss of livestock occurred from rabies during the past year.

The pre-exposure human rabies vaccine program for individuals with a high exposure rate to rabies has brought national attention to Arkansas. These protected individuals and others who have had the Pasteur treatment are taking booster injections of the duck-embryo rabies vaccine and then donating their blood to develop a new product to be used in the treatment of individuals exposed to the bite of a rabid animal. The new product known as rabies immune globulin, human origin, will be used to replace hyper-immune horse serum, thus providing a safer product for the physician who treats individuals with serious wounds around the head and neck.

A program for the study and observation of human blastomycosis in Arkansas is being developed. This disease which is quite prevalent in this area has been under study and observation in dogs for the past six years. During this period more cases of canine blastomycosis have been diagnosed and confirmed than in any other area in the United States. Work with this disease in the animal cases in Arkansas pointed to prevalence and need for further study of blastomycosis as applied to human cases.

Division of Tuberculosis Control

Four mobile x-ray units have been in operation. An effort has been made to x-ray in high incidence areas and individuals at greatest risk, such as previous tuberculosis suspects, known inactive cases, contacts to new cases, all elderly individuals, and those people who have never been x-rayed before.

Our overall policy is summarized in the following five basic tenets:

(1) Case finding modeled to the individual community.

(2) Uninterrupted medical care of the individual from first suspicion through diagnosis, medical management at home or in a hospital, and ultimate rehabilitation.

(3) Emphasis on direct physician-patient relationship at each step in medical management.

(4) Continued awareness of the scientific subtleties in the diagnosis and management of tuberculosis suspects and cases.

(5) We do not plan to withhold medical care as a means of coercion of the individual patient. If coercion is deemed necessary it should be by legal, not medical, means.

Division of Maternal and Child Health

Maternity Care

Maternity clinics were conducted by local physicians assisted by public health nurses in twenty-eight counties as part of the local health program for prenatal and postnatal care of maternity patients, especially those expecting to use midwives. A total of 2,142 attended these clinics for an average of 2.01 visits each; 625 were given post-partum examinations within twelve weeks after delivery.

Midwife Control

In the seventeen years since regulations were passed by the State Board of Health setting up standards for obtaining permits to practice midwifery and forbidding practice without a permit, the total number of active midwives has dropped from 719 to 256, the fewest ever registered in the State. These 256 reported 3,115 deliveries, 7.3 percent of total live births in 1963, also the lowest ever registered. All but 21 of the 256 active midwives had permits in 1963. These 21 reported 47 births.

Child Health

In 1963, 607 premature infants were served by public health nurses, with incubators loaned to 55 families. Approximately 8 percent of the infants born alive in the State last year were born prematurely.

Well-child medical supervision was provided for 3,712 children at well-child conferences in 27 counties. Approximately one-half of the children examined in the conferences were under one year of age; 82 percent were under 5. In addition to medical well-child conferences, child health supervision is provided by nurses in nursing conferences, immunization clinics, and on home visits. Public health nurses are furnished 10 percent ferric chloride and instructions on the use of this material for testing urine for phenylketonuria. A special dietary powder, Lofenalac, was furnished to 3 children with positive phenylketonuria. A program of acquainting the private physicians with the program of screening for phenylketonuria is in progress.

Nutrition Service

The nutrition staff includes a chief nutrition consultant, four district nutritionists, one part-time senior nutrition consultant assigned to the Pediatric Department, University of Arkansas Medical Center, and one part-time dietary consultant. The nutrition staff has continued to give consultation to other professional workers. They have participated in a workshop for food service supervisors in hospitals and nursing homes. They have consulted with individuals on such subjects as diet in diabetes, normal family diet, weight control. Nutritionists have continued to participate in clinics of the Crippled Children's Division of the State Welfare Department in their areas and have followed up the services given in the clinics with home visits and conferences with the public health nurses in the child's home county.

Arkansas Children's Hearing and Speech Center

During the 1963-64 fiscal year, 321 children were seen for evaluations and 268 for rechecks. Ninety-seven children received therapy during the year for a total of 2,085 half-hour therapy sessions. An intensive therapy program was conducted for 34 local children in June. Hearing and speech consultative services were furnished by the staff at 18 Crippled Children's Division Clinics over the State.

Child Development Center

The Arkansas Child Development Center, a special project of the Maternal and Child Health Division, provided medical, psychological, and social evaluations of children suspected of mental retardation. The Center is financed by a special project grant from the U.S. Children's Bureau.

From January 1, 1963, to January 1, 1964, a total of 380 children were evaluated, as compared to 355 for the previous 12-month period. Of the 380, 179 were seen for full medical, psychological, and social evaluation, and 201 were seen for partial evaluations (medical, psychological, or psychological-social) or for re-evaluation. Children are seen from all over the State. Of the 380 children seen, 82 were referred by a physician; 151 were referred by the Crippled Children's or Child Welfare Division of the State Welfare Department; 77 were referred by their parents; 30 were referred by schools; 21 were referred from other sources. Of the 380 children seen, 113 were mentally retarded; with 120 being mildly retarded and able to profit from special education; 77 were borderline to dull normal in intelligence; 39 were average or above in intelligence; 31 were not classified as to intelligence level.

Vital Statistics

Live Births: The number of live births registered in the State in 1963 is 41,846. This is 360 lower than the 42,206 registered in 1962 and 7,306 below the peak year of 1947.

Infant Deaths: 1,072 infants under one year of age died in 1962 for a rate of 25.4 per thousand live births; a decrease of .62 per thousand from the preceding year. Prematurity continues to be the leading cause of infants deaths.

Maternal Deaths: A total of 16 maternal deaths occurred in 1962, for a rate of 3.8 per ten thousand live births. Current 1963 figures of infant deaths and maternal deaths are not available at this time.

Division of Venereal Disease Control

The Venereal Disease Division administers its program within the recommendations set forth by the task force report to the Surgeon General of the United States Public Health Service. The task force recommended action programs designed to eliminate syphilis as a public health hazard in the United States.

A summarization of epidemiologic activities for the fiscal year of 1963-1964 is listed below:

Primary and secondary syphilis brought to treatment	188
Early latent syphilis brought to treatment	58
Other syphilis brought to treatment	1,419
Gonorrhea brought to treatment	7,008
Other venereal diseases brought to treatment	28
Number of private physicians visited	1,380

Division of Accident Prevention

A total of 1,314 accidental deaths was reported in Arkansas in 1963. It is estimated that for each accidental death there are at least 100 disabling accidental injuries, a disabling injury being one which disables the victim beyond the day of the accident. This would suggest that there were at least 131,400 disabling accidental injuries in Arkansas in 1963, plus many thousands of minor non-disabling injuries.

Division activities during the year were concentrated in four major areas: Fire prevention, home gun safety, mouth-to-mouth artificial respiration instruction, and a special research project dealing with the testing of a new process for flame-proofing clothing and bed linens.

Under a special Community Health Research Grant from the U.S. Public Health Service, the Arkansas State Board of Health procured specially treated bed linens and patient clothing (robes, gowns, pajamas) for two selected nursing homes. After a prescribed number of washings, samples are pulled out for laboratory tests to determine if the fabric is still flame-proof and if it has retained the other desirable characteristics such as strength, wearability, appearance, etc. Such a process, universally used, would undoubtedly greatly reduce the present toll of deaths and injuries from clothing burns. This project will continue during the calendar year 1965.

Division of Mental Hygiene

The beginning of the fiscal year saw also the beginning of the Statewide comprehensive Mental Health Planning Project. This project was made possible through a grant of $50,000 for this fiscal year to be used in the development of a Statewide comprehensive plan covering all aspects of mental health. The grant was received as the result of Federal approval by the Department of Health, Education, and Welfare of a grant proposal submitted during the previous fiscal year by this Division. The advisory group that assisted the staff in the development of the grant proposal continued to function as the advisory committee to the planning operation. The Project has been staffed with a one-fifth time psychiatric consultant, a full-time psychologist, an administrative assistant, and a secretary. During the latter part of the second half of the fiscal year, the staff of the Project developed a proposal for obtaining a grant of equal size to continue the planning function for the second year. The proposal was accepted by the Department of Health, Education, and Welfare and the grant was received. The planning operation is continuing.

During the latter portion of the second half of the fiscal year, Governor Orval E. Faubus designated the Arkansas State Board of Health Mental Hygiene Division as the administrator of the mental retardation planning grant funds that could be made available to the State upon approval of a grant proposal submitted to the Department of Health, Education, and Welfare. The Division staff completed the grant proposal and were successful in gaining immediate approval for the state's quota of $30,000 to conduct this planning operation during the succeeding one and a half fiscal years. The staff then was successful in recruiting staff to man the project. The Interagency Advisory Committee on Mental Retardation, as established by the 1963 Legislature, serves as the advisory committee to the planning operation, which will be conducted in a manner similar to the above described Mental Health Planning Project.

Division of Public Health Nursing

There were 148 public health nurses employed in local health units and the central office as of July 1, 1964. While this represents an increase of 5 nurses from July 1963, the number of counties

without nursing service is 5. Thirty-eight counties had only one public health nurse, while 32 counties employed two or more public health nurses. There were 27 nurses newly-employed during the year.

The Director, nursing consultants, and supervisors made a total of 851 visits in local health units to give consultation to public health nurses. There were 53,926 individuals admitted to nursing service last year. The public health nurses made a total of 123,607 nursing visits during the calendar year 1963. They completed a total of 231,193 series of immunizations against typhoid, pertussis, tetanus, polio, and smallpox and furnished nursing services in clinics which had a total of 19,099 patient visits.

Division of Radiological Health

On July 1, 1963, the Division of Radiological Health was activated for the first time, in accordance with an Agreement signed on May 21, 1963, between Governor Orval E. Faubus and Commissioner John Palfrey of the U.S. Atomic Energy Commission. With the signing of this Agreement, the Arkansas State Board of Health assumed licensing and regulatory control over byproduct, source, and special nuclear material of less than a critical mass. In addition to above agreement, a program was instituted to control all other sources of radiation not under the U.S. Atomic Energy Commission control, principally x-rays and radium.

On July 1, 1963, the U.S. Atomic Energy Commission turned over to the Arkansas State Board of Health 48 radioactive material licenses. On July 1, 1964, Arkansas had 96 radioactive material licenses in effect. This is a 100 percent increase in licensing activity during the first year. Forty prelicensing inspections and fifty regular licensing inspections were made during the year.

There were 1,751 x-ray tubes registered during the year. There were 615 dental, 350 medical, and 42 industrial x-ray inspections made. Better than 90 percent of all x-ray equipment inspected required repairs or modifications.

Equipment was purchased, and ten sampling stations were established for the determination of radioactive strontium in milk in Arkansas. Arkansas has the highest concentration of radioactive strontium levels in the United States. Plans have also been started to do off-site monitoring of radioactive air pollutant around the new power reactor 20 miles south of Fayetteville. Air is monitored for radioactive materials continuously. Air levels during 1963-64 were considerably lower than in the previous year. Precipitation was also monitored, principally rain, and considerable fallout from weapons testing is still prevalent. However, at no time have dangerous levels been reached.

Bureau of Sanitary Engineering
Division of Sanitary Engineering

New water systems were constructed in Arkansas in 1963-64 in the following towns: Oxford, Redfield, Wrightsville, Ash Flat, Bono, Pollard, Greenway, Evening Shade, Greenbrier, Alpena, Leola, Humnoke, Coal Hill, Banks, Black Oak, and Coy.

New treatment plants were constructed in Harrison, Hoxie, Hardy, Melbourne, Lincoln, Yellville, Waldron, Glenwood, Subiaco.

Bryant, Calico Rock, Clinton, Turrell, McNeil, Horatio, Melbourne, and Wilmot put in new sewerage systems.

Sewerage treatment plants were built at Brinkley, Clarendon, Earle, Hazen, Hampton, Lewisville, Conway, Glenwood, Jacksonville, Rison, Trumann, Star City, Waldo, Augusta, Cotton Plant, Harrisburg, Hoxie, Hope (Oakhaven), Lepanto, Ozark, Paragould, Paris, Springdale, Waldron, Kensett, West Helena, and Van Buren.

Division of Plumbing

During this year the following cities adopted a plumbing code: Leslie, McNeil, Sparkman, Gillett, DeWitt, Mt. Ida, Emmet, Bay, Cave City, Prescott, and Horseshoe Bend.

Inspection programs were strengthened in: Dermott, Mineral Springs, Monticello, West Helena, Eureka Springs, Green Forest, Ozark, Paris, Trumann, Caraway, and Dardanelle.

Licensing:	*1962-63*	*1963-64*
Master Plumber Licenses	1151	1189
Journeyman Plumber Licenses	1031	1056
Apprentice Cards	428	520

Division of Food and Drug Control

Food processing establishments under supervision:

Bakeries	154	Poultry Plants	96
Bottling Plants	86	Locker Plants	97
Wholesale Groceries	88	Abattoirs and	
Canning Plants	119	Packing Plants	238
Candy Factories	14	School Lunchrooms	1,214

Legal actions: Persons brought before professional boards—13; investigations of violations of State Narcotic Laws—75; persons admitted to U.S.P.H.S. Hospital for treatment of narcotic drug addiction—6; injunctions: to prohibit illegal practice of medicine—5; to prohibit operation of in-

sanitary food processing plant—1; court cases requiring the presence of personnel of this Division: food—2; drug—4.

Division of Dairy Products

The Division of Dairy Products continues to stress quality of products and to encourage increased consumption of all dairy products in Arkansas.

Many technical advances have been made in most of the dairy product plants and other food processing plants. For example, they now have automatic and semi-automatic cleaning systems for their storage tanks, sanitary milk lines, and other equipment.

Intraperitoneal Antibiotic Administration: Rate of Absorption Across Normal Peritoneum

L. Shear et al (Department of Metabolism, Walter Reed Army Institute of Research, Washington, DC), *Amer J Med Sci* 249:1 (Jan) 1965

Changes in serum concentration of penicillin, streptomycin and chlortetracycline were studied following intraperitoneal administration in normal rabbits. Doses used were comparable on a per kg basis to those used in seriously ill humans. Blood levels within the therapeutic range were observed at initial sampling one hour following administration. Thereafter, rates of clearance from the blood were similar to those reported following intraveneous or intramuscular administration. Histological study following repeated intraperitoneal injections failed to reveal evidence of significant local toxicity. Results indicate that antibiotics must not be given intraperitoneally without consideration of possible systemic effect. Furthermore, in selected cases with systemic infection requiring prolonged antibiotic treatment, intraperitoneal therapy may be of value.

Postural Changes in Plasma Volume in Hypertensive Subjects

S. Eisenberg (4500 S Lancaster Rd, Dallas) and P. S. Woll, *Arch Intern Med* 115:17 (Jan) 1965

Alterations in blood volume and in mean arterial blood pressure with quiet standing were determined in 14 hypertensive and 7 normal subjects. The observed decrease in plasma volume in the hypertensive group (13.2%) significantly exceeded that in the normal group (7.3%). The plasma volume changes were associated with commensurate rises in serum protein concentration and hematocrit. The mean arterial blood pressure rose in both groups, but the difference was not significant. The significance of this typovolemic response is not clear; however, it could serve to stimulate counter regulatory vasoconstrictive mechanisms and thus contribute to the increase in vascular resistance.

U OF A MED CENTER LIBRARY

John A. Pierce, M.D.*

The information explosion caught the University of Arkansas Medical Center Library, as it did many other libraries, short on funds and badly in need of personnel. In contrast with many libraries, however, the Medical Center Library had acquired floor space with the occupancy of the new physical plant in 1956.

Many Arkansas physicians will remember the library as it was twenty years ago — on McAlmont Street — a quiet reading room, half filled with book shelves, the wall rimmed around with unbound periodicals, and attended by one or two fine ladies who responded cordially to every request. The late and beloved Mrs. Elizabeth Richardson retired in 1951, and Mrs. Elizabeth Marsh ably assumed the duties of librarian. By 1955, the bound-volume collection was extensive enough to occupy not only the available space in the reading room, but several adjoining rooms as well. Anyone who attempted library work during the summer months will recall the reading room temperature as sufficiently high to discourage the casual reader. The serious reader had an option — near the fan, loose papers were difficult — away from the fan, one risked heat stroke.

As one looked at the new library in 1956, it appeared the available space would not be used for several decades. The reading room alone was larger than the total area occupied previously. The new stacks seemed endless on three separate levels neatly away from the reading room. Unbound periodicals were displayed full face on the wall in a manner that occupied maximal space, and yet space was left unused.

This period was one of rapid expansion and improvement. Consolidation of the Medical School and Pharmacy School Libraries greatly improved the value of the total collection. By the end of 1956, Mrs. Marsh was called to her alma mater and Mrs. Virginia Detloff was appointed librarian. Volumes were acquired to fill out many periodical sets which the library previously had not subscribed to. The monograph collection, which had been grossly deficient in some areas, was expanded and improved to keep abreast of the rapid increase in graduate study and research. By 1960 Mrs. Detloff moved to the west coast, but not until she had recommended and helped procure her successor. The key to Mrs. Detloff's highly successful tenure was expanded service, made possible by the addition of two trained librarians.

Miss Marie Harvin accepted the post of Chief Librarian in 1960. She has continued to emphasize the service function of the library and, at the same time, has directed major improvements in the quality of the collection. Information is more readily accessible than ever before. The real comparison between library service now and then is difficult to draw but some of the most commonly-used indices are presented.

Year	Number of Bound Volumes	Paid Periodical Subscriptions	Number of loans (circulation)	Number of loans outside the city	Number of literature surveys
44-45	17,721	175	7,752	203	not available
54-55	26,828	370	16,191	405	not available
59-60	42,621	709	35,278	777	75
64-65	55,469	1,075	33,324	1,230	160

The Medical Center Library feels a responsibility to all the physicians in Arkansas. Through its facilities, literally everything published in the medical world is available to qualified users. Highspeed photo-duplication has greatly extended the usefulness of library service since it provides permanent copy for the user and permits the material to remain available to other users. Indeed, if you know precisely the material you want, the duplication service may even avoid the need for a library visit. But the library service at the Center is not restricted to the 50,000 bound volumes held, or to the 1,000 paid periodical subscriptions, since other libraries support us with loans (614 in 1964) and since the Library of Congress and the National Library of Medicine promptly acknowledge any proper requests from our Library.

The point is that the Medical Center Library stands ready to help any physician acquire the information that he wants or needs. Requests for reference services outside Pulaski County have increased from 21 in 1960 to 161 in 1964. This is viewed as a proper dependance of Arkansas physicians on the Medical Center Library and it should be encouraged in the interest of improved medical care. An increased use of the Library thus seems certain for the future. But it seems equally

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certain that difficult years lie ahead, unless the Medical Center Library receives financial support over and beyond that appropriated by the State Legislature.

"The Medical Library Assistance Act of 1965" which was introduced simultaneously on January 19 by Senator Lister Hill (S. 597) and Congressman Oren Harris (HR 3142) would provide badly needed financial assistance for the construction and improvement of medical library facilities. An editorial in the New England Journal of Medicine of March 4, 1965 supporting this bill, pointed out that Senator Hill has an outstanding record in the field of health legislation. We would point with special pride to the record of Congressman Harris which has been similarly impressive. Many will recall that Congressman Harris delivered one of the principal addresses at the dedication of our own new medical center in 1956.

Relative to state university medical centers the New England Journal Editor points out "The working library in such a center has to house collections for students in all health professions working at the center, as well as local doctors and other students in the university. New medical schools can expect to accumulate some 100,000 volumes and to take regularly some 1,600 journals." Our own Medical Center Library has received individual and public support for over sixty years and yet falls well below the recommended level of operation. Additional space is already needed and other demands are appearing more rapidly than ever before. The bill is a sound one to be administered through the National Library of Medicine and it needs your support.

Postoperative Myocardial Infarction

S. Baer, F. Nakhjavan, and M. Kajani (Albert Einstein Medical Center, Philadelphia) *Surg Gynec Obstet* 120:315-322 (Feb) 1965

Postoperative myocardial infarction, which is more apt to occur at a later age than the average acute myocardial infarction, was observed in 41 patients. An evaluation of the medical background revealed that 70% of these patients had a history of hypertension, angina pectoris, or previous infarction. In 39% of the 41 patients studied, there were no postoperative symptoms suggestive of myocardial infarction. An abnormal preoperative electrocardiogram should indicate the possible development of postoperative infarction. Abnormal preoperative tracings were found in 82% of the patients. The authors believe that routine postoperative electrocardiograms and more frequent medical consultations should uncover more of these patients.

High-Altitude Pulmonary Edema

Inder Singh et al (Armed Forces Medical Services, New Delhi, India) *Lancet* 1:229 (Jan 30) 1965

This report is concerned with 332 cases of high altitude pulmonary edema in India. The exposed population consisted of men ranging in age from 18 to 53 years; 249 men were fresh inductees to high altitude; 83 were reinductees who suffered from pulmonary edema after being away from high altitude to sea level for 1 to 196 days. The vulnerable altitude was 11,000 feet. Under identical conditions the incidence of pulmonary edema in fresh inductees and reinductees was the same. Although rapid ascent without adequate acclimatization en route, exposure to cold, and physical exertion often precipitated high-altitude pulmonary edema, the condition was also seen when none of these factors could be blamed. Individual predisposition appeared to be important. It is possible that alkalosis induced by hyperventilation on exposure to high altitude, and its persistence for weeks and months, may be the basic disturbance which aggravates hypoxia both at the tissue and at the respiratory levels in susceptible people. The authors discuss the various mechanisms by which hypoxia may trigger pulmonary edema; they also comment on the treatment.

WHAT'S NEW?



NEW ARKANSAS LEGISLATION

The following acts of interest to the medical profession of Arkansas will become law on June 10th, 1965:

ACT 85 of 1965

An Act to Amend Section 13 of Act 198 of Acts of 1957.

Be it Enacted by the General Assembly of the State of Arkansas:

SECTION 1. That Section 13 of Act 198 of the Acts of the General Assembly of 1957 (Arkansas Statutes 72-613) be and the same is hereby amended to read as follows: 72-613. Grounds for revocation, suspension or refusal to issue license. The Board may revoke an existing license or suspend said license or may refuse to issue a license in the event the holder thereof or applicant therefor, as the case may be, has committed any of the acts or offenses herein defined to be unprofessional conduct. The words "unprofessional conduct" as used in this Act (Section 72-601, 72-603—72-623) are declared to mean:

(1) Conviction of any crime involving moral turpitude or the conviction of a felony; the judgment of any such conviction, unless pending upon appeal, shall be conclusive evidence of unprofessional conduct.

(2) Resorting to fraud, misrepresentation or deception in applying for or securing a license to practice medicine or in taking the examination for such license.

(3) Aiding or abetting an unlicensed person to practice medicine.

(4) Procuring or aiding or abetting in procuring a wrongful and criminal abortion.

(5) Violation of the laws of the United States or the State of Arkansas regulating the possession, distribution or use of narcotic drugs, or drugs the sale and distribution of which is regulated by the Arkansas Barbiturate and Benzedrine Law.

(6) Habitual indulgence in the use of alcohol to such an extent as to render himself incapable of exercising that degree of skill and judgment in the treatment of his patients which the moral trust and confidence in him demands.

(7) Grossly negligent or ignorant malpractice.

(8) Habitual intemperance or excessive use of narcotics or of any other habit forming drugs.

(9) Representing to a patient that a manifestly incurable condition of sickness, disease or injury can be permanently cured.

(10) Becoming physically or mentally incompetent to practice medicine to such an extent as to endanger the public.

(11) Insanity or mental disease, if evidenced by an adjudication or by voluntary commitment to an institution for treatment of a mental disease or as determined by an examination conducted by three impartial psychiatrists retained by the Board.

(12) Failure of the applicant to be a citizen of the United States.

(13) Soliciting for patronage or advertising for patronage by any means whatever.

(14) Offering, undertaking, attempting or agreeing to cure or treat disease by a secret method, procedure, treatment or medicine, or representing, directly or indirectly, that he can treat, operate on or prescribe for any human condition by a method, means, or procedure which he refuses to divulge upon demand to the Arkansas State Medical Board.

(15) The willful betraying of a professional secret.

ACT 25 of 1965

An Act to Provide for the Protection of Children From Physical Abuse and Neglect by Those Responsible for Their Care and Protection; to Require Physicians and Certain Other Persons Having Knowledge of Instances of Child Abuse to Report Same to the Appropriate Police Authority; to Relieve Such Persons from Personal Liability, Civil or Criminal, for Participating in or Making Such Reports; to Allow One Spouse to Testify Against the Other Without Consent in Cases of Physical Injury to the Child as a Result of Physical Abuse or Neglect; to Define Penalties for Failure to Comply With the Mandatory Reporting Provisions of This Act; and for Other Purposes.

Be it Enacted by the General Assembly of the State of Arkansas:

SECTION 1. It is declared to be the intent and purpose of this Act to provide for the protection of children who have had physical injury caused them by abuse of neglect and who are further threatened by the conduct of those responsible for their care and protection. Doctors of medicine, doctors of dentistry, coroners, osteopathic doctors, hospital interns, resident physicians, pharmacists, nurses, laboratory technicians, or superintendents or managers of hospitals who become aware of such cases should report them to appropriate police authorities thereby causing the protective services of the State to be brought to bear in an effort to protect the health and welfare of these children and to prevent further abuses.

SECTION 2. Any doctor of medicine, doctor of dentistry, coroner, osteopathic doctor, hospital intern, resident physician, pharmacist, nurse, laboratory technician, or superintendent or manager of a hospital in this State, having reasonable cause to suspect that any child under sixteen (16) years of age brought to him or coming before him for examination, care or treatment has had serious physical injury or injuries resulting from abuse or neglect and caused by other than accidental means by a parent or other person responsible for his care, shall report or cause reports to be made in accordance with the provisions of this Act; provided that when the attendance of a physician with respect to a child is pursuant to the performance of services as a member of the staff of a hospital or similar institution he shall notify the person in charge of the institution or his designated delegate who shall report or cause reports to be made in accordance with the provisions of this Act.

SECTION 3. An oral report shall be made immediately by telephone or otherwise, and followed as soon thereafter as possible by a report in writing, to an appropriate policy authority. Such reports shall contain the names and addresses of the child and his parents or other persons responsible for his care, if known, the child's age, the nature and extent of the child's injuries, including any evidence of previous injuries, and any other information that the reporting person believes might be helpful in establishing the cause of the injuries and the identity of the perpetrator.

SECTION 4. Anyone participating in good faith in the making of a report pursuant to this Act shall have immunity from any liability, civil or criminal, that might otherwise be incurred or imposed. Every report made pursuant to this Act shall be presumed to have been made in good faith. Any such participant shall have the same immunity with respect to participation in any judicial proceeding resulting from such report.

SECTION 5. Neither the physician-patient privilege as provided in Section 22 of Chapter 158 of the Revised Statutes of Arkansas, as amended, [Ark. Stats. (1947) Sec. 28-607] nor the husband-wife privilege as provided in Section 1 of Act 14 of 1943 [Ark. Stats. (1947) Sec. 43-2019] shall be a ground for excluding evidence regarding a child's injuries or the cause thereof, in any judicial proceeding resulting from a report pursuant to this Act.

SECTION 6. Anyone knowingly and willfully violating the provisions of this Act shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be punished by a fine not to exceed Five Hundred Dollars ($500.00) or imprisonment in the county jail for a period not to exceed six (6) months, or both such fine and imprisonment.

SECTION 7. If any provision of this Act or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of the Act which can be given effect without the invalid provision or application, and to this end the provisions of this Act are declared to be severable.

SECTION 8. All laws and parts of laws in conflict with this Act are hereby repealed.

Forum From . . .



THE DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

OF THE UNIVERSITY OF ARKANSAS MEDICAL SCHOOL

TROPHOBLASTIC DISEASE AT UAMC 1940-1964*

Sidney Arnold, M.D.**

Introduction

A personal limited clinical association with a neoplastic entity many times serves to confuse the practitioner especially when divergent treatment and their results are observed. The practice of isolated case reporting in the literature may also be misleading. Why a benign entity, such as hydatid mole, can exist in some patients with no untoward effects and in others, progress to a lethal malignant entity, choriocarcinoma, remains unanswered. Initial divergent pathological classifications of these entities have now been somewhat stabilized by the formation of the Albert F. Mathieu chorion-epithelioma registry. Brewer in his study of 89 cases from the registry found divergent opinions among different Pathologists. Of the 89 cases there was agreement of 30% partial agreement in 21% and disagreement in 48%. The matter of pathological diagnosis therefore, has been standardized somewhat but from here, uniformity of treatment and prognosis becomes difficult for all. It is the object of this paper to discuss the historical aspects of trophoblastic disease, review the literature in regard to its treatment and summarize our experience together with general data as found at the University of Arkansas Medical Center, 1940-64.

Historical

Originally, Sanger in 1893,[1] classified tumors associated with pregnancy into three groups: 1) Sarcoma decidua cellular; 2) Sarcoma decidua cellular with participation of chorionic villi; 3) Malignant interstitial hydatidiform moles and placental polyps. Gottschalk in 1894,[1] disagreed with Sanger's views and advanced the doctrine that choriocarcinoma was a tumor of fetal tissue emanating from the cytotrophoblast (Langhan's Layer). Marchand,[1] in 1895, was the first to demonstrate that choriocarcinoma was an epithelial tumor derived exclusively from the trophoblast-both syncytio and cytotrophoblast. He used the term deciduoma malignum. Teacher's documented study of chorionic tumors in 1903,[1] helped to influence American acceptance of Marchand's ideas. Current ideas and terminology stem from publications of Ewing in 1910. He coined the term "chorio-adenoma destruens."[1] In 1919 Ewing[2] classified all chorionic proliferative growths under the general heading of chorioma. The classification consists of: a) hydatidiform mole; b) hydatiform mole with trophoblastic proliferation; c) syncytial endometritis: d) chorioadenoma destruens; e) chorio-adenocarcinoma. A full length review by Meyers[1] in 1930, found that in 2 decades little additional information of importance had been added.

Definition of these terms according to presently accepted concepts:

1. Hydatidiform Mole — Conceptus without embryo or defective embryo — all or most chorionic villi reveal gross nodular cystic involvement, absence or disintegration of blood vessels and trophoblastic proliferation.

2. Syncytial endometritis — Invasion of the uterus

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by syncytial wandering cells. Considered benign, may produce tumefaction properly designated as syncytioma. It is equivalent to "Marchand's" — "Atypical chorio-epithelioma."

3. Chorio-adenoma Destruens — Trophoblastic growth that tends to invade deeply into the uterine wall or metastasize. Tends to maintain its villous morphologic characteristics. Synonyms are "malignant mole", "destructive mole", and "invasive mole".

4. Chorio-carcinoma — Highly malignant growth, both syncytio and cytotrophoblastic cells fiercely invasive, propensity for early and general hematogenous spread. May arise from embryologic teratomatous cell nests.

In order to understand these pathological entities, a brief embryological review as pointed out by Novak[3] is pertinent. The body cells contain 46 chromosomes. Prior to fertilization, both the ovum and the sperm divide with a resultant haploid number of chromosomes—23. During fertilization the union results in 46 chromosomes and progresses in the following manner:

Blastomere ——→ Morula ——→ Blastocyst

Vacuolization takes place prior to the blastocyst with a resultant inner cell mass known as the embryonic area and lining about the cavity known as the trophoblast. On the sixth day chorionic villi known as trophoblastic buds develop from the trophoblast and implant into the maternal decidua. The trophoblastic buds are composed of two cellular layers known as the (1) Langhan's cell-inner layer and (2) syncytial cell-outer layer. The embryological trophoblast shows one property associated with malignancy and that is its ability to invade locally. Its growth is normally checked at Nitabuch's membrane which is composed of hyalinized fibrin and is an intangible maternal defense mechanism. The trophoblastic cells are the source of the chorionic (HCG) gonadotropin. Deportation of these benign nests of chorionic villi to the lungs is a well substantiated phenomena of pregnancy.

Chorionic gonadotropin was first demonstrated by Aschеim & Zondek in 1927.[4] The human chorionic gonadotropin (HCG) was found to be a glycoprotein. It was crystallized by Claesson in 1948. The HCG can be found in the urine or serum. The urine content is usually 20% lower than that of the serum.[4] Both quantitative and qualitative tests may be used for its determination. Two common qualitative tests used are the A-Z test—utilizing 21-28 day old mice and the Friedman test utilizing young rabbits. Both animals must be sacrificed at 96 hours and 48 hours respectively and the hyperemic ovarian response observed. The International Unit is a unit activity equivalent to that found in 0.1 mgm of the International standard of crystalline chorionic gonadotropin.

In an ordinary uncomplicated pregnancy, a peak of 200,000 I.U. per liter of urine is reached between the 50th and 80th day of gestation, after which it decreases until practically disappearing within a few days after parturition. (Bio Science Lab.)

Clinical History

The diagnosis of trophoblastic disease or one of its sequelae may be suspected when:

1. Patient thinks she is pregnant
2. Abnormal uterine enlargement
3. Antepartum or postpartum abnormal bleeding
4. Hemoptysis
5. Abnormal chest x-ray
6. Absence of fetal heart tones
7. Passage of vesicles per vagina
8. Persistence of high CGT past 80th day of pregnancy or postpartum
9. Toxemia
10. Ovarian cystic enlargement-theca lutein cyst.

On the average there is one mole per 2,000 pregnancies in the United States.[2] Three to five percent hydatid mole are believed to undergo malignant change. 50% chorio-carcinoma arise secondary to hydatid mole—the remainder either follow abortions or term pregnancies. Hydatid mole are more common in women under 19 years and over 40 years. In other areas of the world, namely Asia, the incidence of hydatid mole is 1/200-1/250 deliveries. The serum titer of the HCG follows a physiological level in normal pregnancy. At the time of the first missed period HCG is approximately 1,000 I.U./liter. At the 50th to 80th day of pregnancy 130-200,000 I.U./liter; around 130 days the titer has dropped to 5-10,000 I.U./liter. Normally 3-10 days postpartum the titer is essentially zero. A multiple pregnancy may yield a higher titer that tends to drop more slowly. Also a missed abortion may have a high titer that will recede with evacuation.[2]

Chorionic gonadotropin titer, therefore, is both a useful index for diagnosing as well as following an abnormal pathological state.

General Discussion

Single case reports of choriocarcinoma in the literature are myriad and based upon their recorded histories, one would find it difficult to correlate any consistent chain of thought much less elect a prognosis or recommend therapy.

Variation to the usual pattern of this disease are many. The following cases have been noted in the literature: Choriocarcinoma has been known to follow ectopic pregnancy without simultaneous uterine involvement (Perlson);[5] two cases ab initio, one ovary (right); one from substance of the left broad ligament;[6] one primary pulmonary involvement from an apparently normal placenta (Acosta Sison);[7] metastic naso pharyngeal lesion with subsequent fatal epistaxis (Betson[8] and Marikar):[9] widespread secondary lesions of the skin (Marikar);[9] concurrent involvement of a mother and the infant's anterior alveolar ridge (Mercer).[10] A deceased seven month old white infant has been known to have hepatic and osseous metastasis while two months later the mother found to have choriocarcinoma at time of operation.[12] Choriocarcinoma has also been known to co-exist with a normal pregnancy in utero (Stahmann,[11] Hepow,[12] Acosta-Sison, Mac Rae). A twin gestation has reportedly successfully followed a patient treated with choriocarcinoma with chemotherapy (Freedman).[13] Arios[14] reports a metastatic intracranial lesion which followed a complete hysterectomy and bilateral salpingo-oophorectomy where pathology found no primary in the pelvic organs.

It has usually been said, that a patient with choriocarcinoma would never survive or if the patient survived, she did not have the disease. Brewer[15] discussed this question after consulting the Albert Mathieu chorion-epithelioma registry. As of August 1, 1958, there were 21 patients who had survived 5 years or more and one to 34 years. Treatment of these 21 patients was surgical: Hysterectomy—20 and in one case a laminectomy for a metastic lesion; in five cases the ovaries were not removed, in six of these cases there were metastatic lesions. Hertig reviewed all of these cases and concluded "this contribution proves that there are bona fide cures of true cases of choriocarcinoma."

A case report by Natsum[16] records an unusual case recurring 9 years after subtotal hysterectomy and followed by spontaneous regression of pulmonary metastasis.

Latency periods have been recorded from 2½ years by Feiner to 31 years by Lynch.[16] Natsume notes that it is not rare for a woman in the menopausal age to develop choriocarcinoma (55 years to 64 years). The vagaries of the above cases as well as accounts of spontaneous cures of true cases of choriocarcinoma demonstrate the inconsistency of this entity. Most certainly, the oft stated view (Douglas)[17] that in these diseases the unexpected and atypical are common place.

Scott[18] in regard to etiology of trophoblastic disease noted an increased risk with pregnancies occurring in older women as well as a disproportionate frequency in first pregnancy. There was also a higher incidence of choriocarcinoma in pregnancies resulting from a fresh mating in multiparous women. Blood group studies have a shift to groups A, B, AB. Schmidt[19] by comparing blood group factors of husband and wife revealed no evidence of maternal immunization by the fetal tumor tissue. Regarding embryonic blood group, there was noted only 1:14 chance that the embryonic blood group was unsuitable for the mother to receive, therefore, the lack of maternal antibody response was considered a factor in the development of choriocarcinoma in a wife and embryonal carcinoma in her husband. It was postulated that the spermatozoon may have acted as a means of transfer.

Metastatic sites, as summarized by Acosta-Sison[20] show the lung to be the primary sites in 43.75%, vagina 31.21%. Total metastasis in all sites eventually show: lung 94%; vagina 43.75%; brain 28.12%; liver 28.12%; kidney 25.00%. Mortality is 100% when there is brain, liver or kidney metastasis. Acosta-Sison also reports that early detection and treatment of metastasis in lung, vagina or broad ligament may be followed by recovery.

Management of choriocarcinoma and chorioadenoma destruens varies from 10-15% documented spontaneous regression as noted by HI,[21] while bona fide cures by surgical extirpation have also been noted by Brewer[15] and pathologically confirmed by Hertiz. Browne[22] reports a case of choriocarcinoma of the uterus with pulmonary metastasis cured by x-ray therapy followed by surgery. Spontaneous regression, surgery, surgery and x-ray[24] still leave 60% (Corscaden)[23] of these gynecologic cancers uncured.

Hertz[27] states that the histological findings provide a general statistical basis for anticipating

clinical outcome but the clinical course in any individual case is not predictable. He states "the course of any case with trophoblastic disease as a precarious balance between factors of host resistance and tumor progression".

Hershehyshyn describes a mortality of 95% of untreated cases or 40 to 42 cases with metastatic choriocarcinoma collected from the literature[27] while Brewer cites a 5 year survival of 10 of 52 cases or a mortality of 81%.

These mortality rates demand another approach to this problem. For this reason the field of chemotherapeusis has been investigated with reference to trophoblastic disease. Hertz[27] in a seven year study with 111 cases of metastatic trophoblastic disease noted 60% remission with choriocarcinoma and 75% remission with mole and chorioadenoma destruens using chemotherapy. Of 87 patients treated initially with, Methotrexate (MTX), 51% experienced a complete and sustained remission—only 2 failed to show subjective tumor regression. In 23 (MTX resistant) cases of Actinomycin D has been used and has been responsible for approximately 52% complete remissions while the remainder gave variable response. He, Hertz, therefore, indicates that one can expect a complete remission rate of 75% with successive use of MTX and Actinomycin D as compared with 19% remission rate or less without chemotherapy. Vincaleukoblastine has been used on refractory patients treated with MTX. Actinomycin D and combinations of other therapeutic agents have been used, but results are not good.

HI[21] noted different chemotherapeutic agents have been used and found to exert a profound adverse effect on the early stages of embryonic tissue. Nitrogen mustard, chlorambucil, aminopterin (folic acid antagonist) and Don, a glutamine antagonist—(6 diazo-5-oxo-1-norleucine) have been used. An oncoly tic plant alkaloid, vincaleukoblastine, has also been used as noted above-particularly in MTX resistant cases (Hertz).[27]

Nitrogen mustard and chlorambucil are cytotoxic agents along with thiotepa. They are also radiomimetic and acts by altering DNA metabolism. DON, 6 mercapto purine are anti-metabolites and attacks certain enzyme systems in the cell and thereby interferes with cellular reproduction.

Prior to treatment with chemotherapy, pulmonary x-ray, hepatic, renal and bone marrow—WBC, RBC, Platelet, reticulocyte — evaluation should be done. Pre-existing hepatic and renal dysfunction contraindicates extensive therapy (Hertz).[26] Chorionic gonadotropin titer should be known and used as a major guide in clinical evaluation and therapy. HI[21] states that a rapidly rising or receding chorionic gonadotropin titer is a sensitive and reliable index for following the progress of the disease. Recession of urinary chorionic gonadotropin titer usually comes after the third 5 day course of drug therapy.

The most frequent manifestations of reversible toxicity, following chemotherapy, are stomatitis, bone marrow depression, drug rash, anorexia, nausea, occasional emesis, diarrhea.[26] Hertz[26] has noted maximum clinical toxicity 4-7 days after the 5 day course. Methotrexate is excreted largely by the urine, therefore, with this drug intake and output are of prime importance. Hertz[25] notes that the most critical factor in treating choriocarcinoma is the duration of the disease process prior to onset of treatment. For this reason, every effort should be made to make an early diagnosis.

*The most successful chemotherapeutic agent to date is methotrexate. The standard dosage used is 10-30 mg. in aqueous solution (50 mg/cc) daily for 5 days. Each course is withheld until the preceding toxic symptoms subside. Hertz notes that the number of courses that are required vary—the majority require four, others vary from 1 to 9 courses. The greatest number of courses for one patient has been 11.[25] Longer intervals between courses are required as the number of courses increase. HI[21] states that the intervals between courses usually vary between 7-12 days. The dosage of actinomycin D is 0.5 mg. I.V./day for 5 days. Vincaleukoblastine sulfate is given I.V., 3-6 mg./dose B.I.D. x 3 days. Combinations of chemotherapeutic agents have also been used in resistant cases. Bagshowe and McDonald report good results with methotrexate and 6-mercapto purine. Actinomycin D and chlorambucil have also been used in combination. Chlorambucil dosage is 10 mgm daily p.o. Nitrogen mustard used singly or in combination with x-ray has also been reported effective.[21]

If after combinations of chemotherapy a positive titer remains the uterus should be removed[21] and it is advisable to administer a five day course

*MTX 2.5 mgm/kgm.—Lederle; ACT-D 10 mcg/kgm.—MSD

TRIPLE THERAPY: P.O { 5 Mgm. MTX. / 10 mgm. Chlorambucil (Leukeron)—Burroughs } IV 0.5 MG ACTINO D in running I.V. infusion.

of MTX immediately postoperative to prevent dissemination of tumor cells.

Hertz[27] has used chemotherapy in non-metastatic trophoblastic disease in whom the classical management has been immediate hysterectomy-hydatidiform mole, chorio adenoma destruens. In this way, child bearing function may be preserved and utilizing the CGT as a sensitive indicator subsequent surgery could still be done. Twenty-eight women have been treated and followed thus far for 8 months to 6 years. In 6, the curettings were consistent with choriocarcinoma, 4 of the 6 gained prompt and complete remission following 1-4 courses of MTX. The remaining 2 responded to surgery. There were 22 other patients whose titer remained elevated 1-12 months post mole evacuation. There was remission in 21 of these cases with 1-4 courses of MTX. The remaining one has persistent disease following surgery.

HI[21] makes the following recommendations regarding moles. After evacuation, the CGT titer should be negative within a week. It is advisable for the patient to refrain from pregnancy for one year. There will be an occasional patient who shows a persistently elevated titer for 3-5 months. These patients should receive a 2nd D&C in 3 months. If the titer persists a hysterectomy is recommended if no distant metastasis is present. He further states that in case of chorioadenoma destruens immediate hysterectomy assures the best cure. These patients should always be followed with titers. Several facts from the study of Hertz[26] are noteworthy.

1. No relationship of age and therapeutic response.
2. Presence or absence of uterus plays no significant role.
3. There appears to be more favorable results in ovarectomized patients.
4. Whether choriocarcinoma follows hydatid mole, abortion or pregnancy has little effect on outcome.
5. No correlation between height of the initial titer and response to therapy.

UAMC Series

This study of trophoblastic disease covers the period of 1940-64. During this time there were a total of 41,724 deliveries and 2,294 abortions. Incidence of abortion 5.5%. The total number of cases of trophoblastic diease was 49.

There were a total of 11 choriocarcinomas during this interval. Ages of the patients varied from 15-50 years. Eight were colored patients and three were white. There were 9 multipara and 2 primipara. Seven of the patients with choriocarcinoma followed abortions or 1 choriocarcinoma to 287 abortions and four followed delivered term gestations or 1:13,908 pregnancies. The interval of time postpartum for the patients seeking medical aid varied from 6 weeks to 20 years. Following abortions, the interval of time varied from 3 days to 7 months.

The most common symptoms manifested by these patients were irregular vaginal bleeding—9, weakness—8, lower abdominal discomfort and pain—5, weight loss—4, nausea and vomiting. Three uncommon symptoms were fever, hemoptysis and vaginal discharge.

Upon physical examination the most common finding was uterine enlargement—9, vaginal metastasis—5, posterior cul-de-sac mass—2, bilateral adnexal masses—3, unilateral adnexal mass—1, labial metastasis—1, right upper quadrant mass—1.

Utilizing laboratory studies: anemia positive chest x-rays were noted in 8, elevated chorionic gonadotropin—1 and one bilateral hydroureter and hydronephropathy was noted.

Therapy utilized, has been variable. As a referral center, patients with short latent periods have been the exception rather than the rule. Many of the patients were terminal upon admission. Treatment is noted as follows:

Treatment		Living	Deceased
Methotrexate	(4)	2	2
Nitrogen Mustard	(1)		1
Cyanide Perfusion	(1)		1
Surgery	(1)		1
No Treatment	(4)		4

The sequence of treatment of the methotrexate group is as follows:

		Living	Deceased
Methotrexate—Folic Acid	(1)		1
Metho. Surg. Metho. Folic	(1)		1
Surg.—Metho.	(2)	2	

The 2 patients treated with methotrexate that died were 21 and 24 years of age, one white and one colored, one multipara and one primipara, duration of symptoms were 7 and 10 months; both had vaginal, parametrial, pulmonary involvement. One received two courses of methotrexate followed by subtotal hysterectomy and bilateral salpingo-oophorectomy. The second received 3 courses of methotrexate with subsequent improvement in her pulmonary lesions, regression of vaginal metastasis, softening of the parametria. Chorionic gonadotropin levels declined from >25,600—<100,000 I.U. to >400—<1,600 I.U./100

ml. She was discharged to be followed as an outpatient, returned in five weeks with severe chest pain, suffered a pulmonary hemorrhage and died. Both patients had been given folic acid as interval or as concomitant therapy.

Two patients have been treated, with methotrexate and surgery and survival time to date is 27 and 18 months respectively. One patient is 50 years of age and the second 33 years. Both are colored. Duration of symptoms 5 months and 2 weeks prior to treatment. Each had vaginal metastasis and one had pulmonary metastasis. Both patients had surgical intervention followed by 1 and 2 courses of methotrexate therapy. One patient, when last seen still carries a titer of >6,400—<25,600. No folic acid was used in either case. Survival rate of the methotrexate, treated patients is 50%. There are no survivors in the remaining 7 patients who received nitrogen mustard, cyanide perfusion, surgery alone and no treatment. There were 4 in the latter group who were terminal with multiple metastasis upon admission.

There were four cases of chorioadenoma destruens in this period. The age of the patients ranged from 27 years to 56 years. All patients were multipara. There were 3 colored patients and 1 white patient in the group. Two cases followed pregnancies and two cases followed abortions. The most common symptoms were vaginal bleeding—4 and pelvic pain—1. Three of the patients were found to have uterine enlargement, one patient had bilateral ovarian cysts. Three of the patients were anemic. Only one patient had metastatic pulmonary disease. No chorionic gonadotropins titers on these patients were available. One A-Z test recorded was negative. All patients were treated surgically—total abdominal hysterectomy, bilateral salpingo-oophorectomy—3, 1 subtotal hysterectomy. There was 1 incidental appendectomy, 1 perineorrhaphy, 1 cervical cone. All patients are living and all having survived ten years or more.

There were 22 cases of hydatidiform mole. Age varied from 16 years to 38 years, 19 were multipara and 3 primipara, 12 were colored and 10 were white. Twenty-one of the moles followed abortions and 1 was associated with pregnancy. Like the two previous entities vaginal bleeding was the most common present ng symptom. Toxemia, anemia were a common finding. Spontaneous passage of the mole was noted in 9 cases. There were 11 cases of uterine enlargement greater than clinical history would indicate, 2 bilateral adnexal masses, 1 unilateral adnexal mass and 1 associated abruption. There were two cases with hemoglobin levels below 9 gms., one patient had nodular densities in both lung fields which cleared postoperatively after a subtotal hysterectomy—bilateral salpingo-oophorectomy. A hydatid mole was found in the right tube in this case (Fisher). Four CGT were recorded—>75,000; >850,000; <500; >*400—1,600 I.U.—three diminishing post evacuation. One patient* continued to carry a titer 4 months post evacuation and last contact revealed patient was pregnant and registered in a New York Prenatal Clinic.

Treatment was variable as noted:

D & C	13
TAH	4
TVH & Repair	1
TAH, Right S & O	1
Subtotal Hysterectomy Bilateral S & O	1
D & C⟶Perf.⟶Exp. Lap.⟶Perf. Repaired (Huff)	
No Treatment	1

Postoperatively, three patients did not return and were lost to contact. All others at last contact were living and well.

Synctial endometritis was diagnosed in two cases; ages 43 and 15 years; 1 primipara and 1 multipara; 1 colored and 1 white; both followed abortions. Symptoms were vaginal bleeding and toxemia. Both uteri were enlarged, one adnexal mass and one right upper quadrant mass was noted. Ascites was noted in one case. Anemia was noted in both cases. One chest x-ray revealed cloudiness in left lung base.

The case with associated ascites and pulmonary infiltrate was a 43 year old white female, gravida 8, para 7, abortions 1, presented with vaginal bleeding, toxemia, spontaneously passing "grapes" at Arkansas Baptist Hospital, a paracentesis was productive of 7,660 cc. fluid, a subsequent D&C was diagnosed as syncytioma, therapy consisted of deep x-ray therapy, 4 ports, two anterior and two posterior with 2,000 r. to each port over a 17 day period. Nine years later the patient sustained vaginal bleeding, was examined, and diagnosed as postcoital trauma. A frog test at this time (2-51) was negative. Follow-up inquiry 7-62 through the Bureau of Vital Statistics and Public Welfare revealed no record of this interesting case.

The remaining case was treated by a curettage,

exploratory laparotomy hysterotomy. Both patients were known to have lived 5 years or more (9 and 6 years).

Summary and Conclusion

As a central referral center for the State of Arkansas, our accumulation of 24 years of trophoblastic disease totals 49 cases or on the average of 2 a year.

1. Chorio carcinoma has been treated successfully in 2 cases with a mortality rate, to date, of 50%. Surviving patients were treated with methotrexate.

2. Chorio adenoma destruens were treated by a variety of surgical procedures and all patients have survived for a period of 10 years or more.

3. Twenty-two cases of hydatidiform mole were treated by a variety of surgical procedures. Nineteen patients were known to be living 1-5 years post therapy. Three patients were lost to contact. Efforts to contact these were of no avail.

4. Two cases of syncytial endometritis were treated; one with external radiation and one by surgery. Both patients survived 5 years or more (6, 9 years).

Our series is small and it is felt that there is no statistical significance in our small groups, therefore per cent statistics were not presented.

Our experience with chorio carcinoma and its treatment with Methotrexate (4) does favorably compare with the findings by Hertig, et al.

We have no experience with the benign trophoblastic disease and subsequent treatment with chemotherapy.

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TABLE I

Ewing's Classification

1919

A. Hydatid Mole
B. Hydatid Mole with Trophoblastic Proliferation
C. Syncytial Endometritis
D. Chorioadenoma Destruens
E. Choriocarcinoma

TABLE II

Trophoblastic Disease

UAMC 1940-64

Deliveries	41,724
Abortions	2,294
Trophoblastic Disease	49

TABLE III

Trophoblastic Disease

UAMC 1940-64

Choriocarcinoma	11
Chorio Adenoma Destruens	4
Hydatid Mole	22
Syncytial Endometritis	2

TABLE IV

Trophoblastic Disease

UAMC 1940-64

Choriocarcinoma

Rx:		Living	Deceased
*Methotrexate	(4)	2	2
Nitrogen Mustard	(1)		1
Cyanide Perfusion	(1)		1
Surgery	(1)		1
No Treatment	(4)		4

TABLE V

Trophoblastic Disease

UAMC 1940-64

Choriocarcinoma

*Methotrexate Group
(sequence of Rx)

	Living	Deceased
Metho.→Folic Acid (1)		1
Metho.→Surg.→Metho.→Folic (1)		1
Surg. Metho. (2)	2	—

TABLE VI

Trophoblastic Disease

UAMC 1940-64

Chorioadenoma destruens (4)

Rx		Living	Deceased
TAH, Bil. S&O	(3)	3	
Subtotal Hyst.	(1)	1	

TABLE VII

Trophoblastic Disease

UAMC 1940-64

Hydatid Mole (22)

Rx		Living	Deceased
. . D&C	(13)	11	
. TAH	(4)	3	
TVH—Repair	(1)	1	
TAH, Right S&O	(1)	1	
Sub total Hyst. Bil. S&O	(1)	1	
D&C→Perf.→ Exp. Lap.→Repair	(1)	1	
No Rx	(1)	1	

. Did not return or no contact.

TABLE VIII

Trophoblastic Disease

UAMC 1940-64

Syncytial endometritis (2)

Rx		Living	Deceased
Deep X-Ray	(1)	*1	
D&C Exp. Lap, Hysterotomy	(1)	1	

TEACHING SEMINAR

University of Arkansas Medical Center
Little Rock, Arkansas



OCCLUSIVE CEREBROVASCULAR DISEASE

Dennis D. Lucy, Jr., M.D.*

Introduction

The President's Commission on Heart Disease, Cancer and Stroke reported that in the year 1963 approximately 201,000 Americans died of strokes. This ranks stroke the third most common cause of death in the United States. Although most of these patients were in the older age group, 38,411 were under the age of 65. This ranks stroke as the fifth most common cause of death in people under 65 years of age in the United States. At least 2 million people now alive in the United States have suffered a stroke, and stroke victims constitute 16 per cent of the patients in skilled nursing homes.

In general, cerebrovascular disease results in a stroke by occlusion or rupture of the diseased vessel. We will limit our discussion to occlusive cerebrovascular disease and omit intracerebral hemorrhage and primary subarachnoid hemorrhage. I will not attempt an all inclusive discussion of this subject, but will rather limit myself to a review of some of the more recent reports, and to information which is not readily available in a textbook of neurology.

Applied Anatomy and Physiology

The blood supply of the brain is primarily by way of the paired internal carotid and vertebral arteries. There are two major and one minor systems of anastomoses between these arteries and their branches. The first major system of anastomosis is the circle of Willis. The two internal carotid arteries are connected by way of their anterior cerebral branches and the anterior communicating artery. The vertebral arteries join to form the basilar artery and the basilar artery is connected to each internal carotid artery by way of the posterior cerebral and posterior communicating arteries on each side. The value of the circle of Willis to a patient in which one or more of the internal carotid or vertebral arteries is stenosed is obvious. However, in a study of the vasculature of the brains of 350 autopsied persons without known cerebral disease, Alpers and his co-workers[1] found a string-like caliber of one of the component vessels in 27.4 per cent of these brains. This defect in the circle of Willis would obviously decrease the ability of this anastomosis to compensate for the occlusion of one of the internal carotid or vertebral arteries. The second major system of anastomosis is in the pia-arachnoid, and consists of arterial communication between the anterior and middle cerebral arteries, the middle and posterior cerebral arteries, the two anterior cerebral arteries, the superior and anterior inferior cerebellar arteries, the anterior inferior and posterior inferior cerebellar arteries, and the superior and posterior inferior cerebellar arteries.[2] The minor system of anastomosis is at a pre-capillary and capillary level within the substance of the brain. Besides these three systems of anastomoses between the internal carotid and vertebral arteries, there is an additional system of anastomosis between these arteries and the external carotid system of arteries. One of these anastomoses is by way of the ophthalmic branch of the internal carotid artery.

Approximately 15 per cent of the resting cardiac output goes to the brain, and approximately 20 to 25 per cent of the total oxygen used

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by the body at rest is required by the brain. The ability of the brain to withstand ischemia varies in different locations. Total occlusion of the blood flow to an area of the cortex will result in permanent neuronal damage within 4 to 5 minutes. The cerebral blood flow is regulated by the arterial head of pressure and the vascular resistance in the brain. By varying the resistance the cerebral blood flow can be maintained at a constant level in a range of widely varying blood pressures. The principal factors which regulate the vascular resistance in the brain are the blood levels of CO_2 and O_2 and the blood pH. Vasoconstriction results from an increase in O_2, a decrease in CO_2, and an increase in pH. Vasodilatation results from a decrease in O_2, an increase in CO_2, and a decrease in pH.

Pathology, Classification and Diagnosis

The two major clinical types of occlusive cerebrovascular disease are transient cerebral ischemia and infarction. In transient cerebral ischemia the decreased blood flow to an area of the brain is incomplete and transient. It results in a temporary functional impairment of that portion of the brain, but in no permanent damage. In an infarction, the degree of ischemia is so severe that there is resulting neuronal degeneration and death. The underlying vascular pathology which results in episodes of transient cerebral ischemia and infarction is in most cases atherosclerosis. The atheromatous plaque impinges on the lumen of the vessel providing a site for thrombus formation and may fragment, producing emboli which are carried in the blood to lodge in and occlude more distal vessels. Besides atherosclerosis, endarteritis obliterans, polyarteritis nodosa, and sickle cell disease result in thrombotic occlusive cerebrovascular disease. Cerebral embolism is commonly associated with diseases of the heart which cause low cardiac output, and especially when there is an associated arrhythmia. Emboli may originate in other areas of the body and reach the brain through a patent foramen ovale. The differential diagnosis in the patient presenting with the clinical picture of a cerebrovascular accident sometimes includes treatable diseases such as diabetic coma, hypoglycemia, subdural hematoma, extradural hematoma, and exogenous poisoning, and these possibilities must be kept in mind. The differentiation between types of cerebrovascular disease is often difficult, and sometimes impossible to make on a clinical basis. Although there may be a small amount of blood in the cerebrospinal fluid associated with an infarction, the presence of large quantities of blood in the cerebrospinal fluid is against the diagnosis of occlusive cerebrovascular disease.

Our diagnosis of cerebrovascular disease includes not only the type, but also the location of the lesion. The importance of extracranial occlusive vascular disease in patients with impaired cerebral blood flow is emphasized by the following reports. Fisher[3] reported that of 432 routine, consecutive autopsies, 41 patients showed severe narrowing or complete occlusion of the internal carotid artery in the neck, whereas only 12 patients showed a similar degree of involvement in the vessels adjacent to the circle of Willis. Hutchinson and Yates[4] studied the vascular supply to the brain of 83 autopsied patients who had the clinical diagnosis of a cerebrovascular accident. They found that 40 of these patients had significant stenosis or occlusion of one or more of the internal carotid and vertebral arteries in the neck. Of the 22 patients who had cerebral infarcts at autopsy, 12 were apparently due to vascular disease in the neck, and only 6 were associated with occlusion of the appropriate intracerebral arteries. There was apparently no ready explanation for the infarction in the remaining 4 patients. Besides involvement of the carotid and vertebral arteries in the neck, occlusive vascular disease of the great vessels in the thorax from which the internal carotid and vertebral arteries arise can result in cerebral ischemia. These arteries, the innominate, common carotid, and subclavian arteries, are involved to a significant degree less frequently than the internal carotid and vertebral arteries in patients with cerebrovascular disease. The most common location for a significant plaque to be present is at the origin of the internal carotid as it branches from the common carotid artery, and at the origin of the vertebral artery as it branches from the subclavian artery. Atheromatous plaques in these locations are accessible to surgical removal or bypass.

The typical neurological picture associated with an occlusion of the major arteries supplying the brain can be found in a textbook of neurology. However, our ability to accurately localize the site of obstruction on the basis of the neurological findings is very limited. An identical picture is associated with occlusion of several arteries of the brain, and the neurological findings associated

with the occlusion of a given vessel is variable in different patients. There are several explanations for these findings. A given tract within the central nervous system is supplied by different arteries at different levels and, therefore, an occlusion of any of these arteries will result in the neurological signs associated with destruction of this tract. There is some individual variation in the distribution of arteries to the brain, but a more important explanation for the variation in clinical picture associated with an occlusion of a given vessel probably lies in the variable ability of the collateral circulation to compensate for this occlusion. Embolism will usually give a more complete and typical neurologic picture for occlusion of a given vessel than thrombosis, since in embolism the collateral circulation does not have time to develop as well as in progressive atherosclerosis and thrombosis of the vessel.

Physical examination should include cautious palpation of the carotid pulses, listening for bruits in the area of the bifurcation of the common carotid artery and in the medial one-third of the supraclavicular space, and blood pressure determination in both arms. Other procedures such as alternately occluding each internal carotid artery manually with the head in varied positions and ophthalmodynamometry are performed, but are of limited value. The former procedure is always potentially hazardous and ophthalmodynamometry is potentially hazardous if a systolic retinal arterial pressure is determined. For this reason it is preferable to determine only the diastolic retinal artery pressure. Palpation of carotid arteries is of definitely limited value. The presence of a bruit is of more significance. However, apparently benign bruits are heard, and severe stenosis is at times present without an associated bruit. The determination of blood pressures in each arm is of particular value in the diagnosis of a subclavian or innominate steal. These steal syndromes result from an occlusion of the innominate artery on the right or the subclavian artery on the left in which the occlusion is proximal to the branching of the vertebral artery and results in decreased blood flow to the upper extremity on the side of the lesion. This decreased blood flow results in the siphoning of blood from the brain through the vertebral and/or carotid artery resulting in episodes of cerebral ischemia.

For the accurate localization of the site of occlusion necessary for surgery arteriography is essential. Although the risk is small, that definite morbidity and mortality are associated with these procedures must be kept in mind. The reasons for and against doing multiple vessel arteriography and the procedure are beyond the intended scope of this paper.

The Natural History and Incidence of the Disease

In our enthusiasm to treat occlusive cerebrovascular disease, we have attempted to evaluate therapy with a totally inadequate knowledge of the natural course of the disease process. Marshall[5] recently reported a study which he had conducted on 158 patients with transient ischemic cerebrovascular attacks. He defined these attacks as a disturbance of neurological function of less than 24 hours' duration occurring in the territory supplied by the carotid or vertebro-basilar arteries and believed on clinical grounds to be associated with atherosclerotic disease in those arteries or their branches. He divided these cases into the following groups.

Group I consisted of 68 patients who clinically had sustained an infarction of the brain, but who gave a history of transient ischemic attacks preceding the infarction. Group II consisted of 61 patients who experienced transient ischemic attacks and who had not experienced an infarction or hemorrhage when they were first seen. Group III consisted of 29 patients who developed transient ischemic attacks for the first time after having sustained an infarction or hemorrhage in the brain. We will confine our review to the study of the first two groups.

Only one of the 61 patients in Group II who at the time of presentation had only experienced transient ischemic attacks subsequently developed a permanent neurological deficit during the follow-up period. The significance of this is emphasized by the fact that the average number of months which elapsed between the first transient ischemic attack and the stroke in Group I patients was 14.4 months for those with the transient ischemic attacks in the carotid artery territory, and 23.3 months for those in the vertebro-basilar territory. And in Group II the average duration of follow-up was 43.9 months for transient ischemic attacks in the carotid distribution, and 49.1 months for the vertebro-basilar distribution. Therefore, the difference between the two groups in the development of permanent neurological deficit cannot be readily explained on the basis

of an insufficient follow-up time in Group II. The two groups were compared in an attempt to define some criteria by which those cases destined to develop permanent neurological deficit, usually due to infarction, could be differentiated from those whose course remained relatively benign.

A comparison of the clinical manifestations of the transient ischemic attacks occurring in the territory of the carotid artery between the two groups revealed no obvious difference. However, in the case of transient ischemic attacks in the vertebro-basilar distribution hemiparesis was present more frequently in those patients who subsequently developed permanent neurological deficit. Therefore, it appears that vertebro-basilar insufficiency manifest by transient hemiparesis carries a worse prognosis than when the ischemic episode is manifest by such symptoms as vertigo, disturbance in the visual fields, diplopia and drop attacks.

The typical transient ischemic attack is of brief duration, usually lasting less than 5 minutes. However, 38 of these patients experienced attacks which lasted several hours.

A comparison of the two groups by the number of transient ischemic attacks experienced revealed that 76 per cent of the patients with transient ischemic attacks in the carotid distribution experienced permanent neurological deficit after having had only one or two attacks prior to the infarction. Fifty per cent of the patients who did not develop an infarction had only one or two attacks of transient cerebral ischemia. The corresponding figures for the vertebro-basilar distribution were 52 and 28 per cent respectively in Group I and II. Therefore, it is obvious that if a patient is to sustain a permanent neurological deficit after experiencing transient cerebral ischemia the percentage is high that this will occur after only one or two of these transient attacks. This is particularly true when the carotid artery is involved. The implication in terms of possible therapy is also obvious. If therapy is to be undertaken it should be undertaken early. If the patient survives a number of episodes of transient cerebral ischemia without sustaining permanent neurological deficit his chances of avoiding infarction are better. This may be related to the fact that these patients have the stimulus and time for the development of more adequate collateral circulation. However, when the patient is seen after one or two episodes of transient cerebral ischemia we have no basis for differentiating whether he is going to fall into the Group I or Group II type of patient.

The duration and frequency with which patients sustain episodes of transient cerebral attacks is extremely variable. All of the following have been observed: Several attacks followed by a complete remission. Several attacks followed by an infarction. Numerous attacks over several years followed by infarction. Attacks continuing for the duration of the follow-up period without an infarction.

A comparison of the blood pressure in the two groups revealed no significant difference in those patients with carotid insufficiency. However, in the patients with transient ischemic attacks in the vertebro-basilar distribution, those patients who sustained permanent neurological deficit had a significantly higher blood pressure than those who continued a relatively benign course. The mean diastolic blood pressures in these two groups were 104.0 mm Hg., and 95.9 mm Hg.

In 1964, Eisenberg and his co-workers[6] reported the incidence of cerebrovascular accidents and survival rates following cerebrovascular accidents in the population of a single county in the state of Connecticut. They attempted to evaluate all patients who sustained a stroke between April 1, 1957 and March 31, 1958. They found 191 patients who sustained a stroke during this year, and followed the group without loss of contact with any of the patients for 5 years. In this group of 191 patients, cerebral thrombosis was diagnosed in 48 per cent, cerebral hemorrhage in 36 per cent, cerebral embolism in 2 per cent, and the type of stroke was undetermined in 14 per cent. No differentiation was made between intracerebral hemorrhage and primary subarachnoid hemorrhage. The extent of work-up and accuracy of diagnosis in a study of this nature varies. Twenty-three per cent of the strokes occurred in people under 65 years of age. The total crude incidence rate in this population was 2.3 per 1000 population per year. After adjustment of the county's population age distribution to that of the United States the estimated instance rate for the United States was 1.7 per 1000 per year. The survival rate per 100 patients with cerebral thrombosis and cerebral embolism was 58 at the end of 1 month and 16 at the end of 5 years. For patients with cerebral hemorrhage, it was 18 at the end of 1 month and 7 at the end of 5 years. This is a higher mortality rate for patients

with cerebral thrombosis than is usually reported, but because of the nature of the study it is perhaps a more accurate figure.

Treatment

Obviously, the ideal form of therapy is the prevention and treatment of the underlying vascular disease, which in most cases would be to prevent the development of atherosclerosis. Having no definitive means to accomplish this, we are left with an attempt to prevent the development of a brain infarction, and to decrease the number of episodes of transient cerebral ischemia.

Vasodilator agents

The pathophysiological explanation for the intermittency of symptoms in patients with episodes of transient cerebral ischemia is incompletely understood. Repeated dislodgment of small emboli from atheromatous plaques and transient episodes of hypotension are possible explanations. However, these probably do not account for the vast majority of episodes. A third explanation is the occurrence of transient arterial or arteriolar spasm. Although arterial spasm of the intracranial arteries is known to occur under certain circumstances such as subarachnoid hemorrhage, its part in the production of episodes of transient cerebral ischemia is unsettled. If this is an important mechanism then the utilization of vasorelaxant drugs might benefit these patients. Experimentally, isoxsuprine (Vasodilan) and nylidrin (Arlidin), as well as cyclandelate (Cyclospasmol) to a lesser extent, appear to have a vasorelaxant effect upon the cerebral arteries.[7] The method of evaluation was indirect and utilized the effect of the drug on the electroencephalogram hyperventilation pattern. Hyperventilation results in a slow wave build-up which is thought to be secondary to vasoconstriction resulting from hypocapnia. This slow wave build-up was prevented or reduced by the utilization of these vasorelaxant drugs. By direct cerebral blood flow measurements it has been demonstrated that nicotinic acid does not increase cerebral blood flow and papaverine does. The clinical significance of this is limited by the fact that total cerebral blood flow is measured. Episodes of transient cerebral ischemia can result from decreased blood flow to a limited area of the brain, and critical variations in the blood flow to this restricted area may be too small to result in significant changes in the total cerebral blood flow. The critical evaluation of these drugs will depend on a well controlled clinical trial. Two such clinical studies on isoxsuprine have been reported. However, these studies were on psychiatric patients and appear to be inconclusive.

Anticoagulants

There are a number of reports in the literature on the use of anticoagulants in cerebrovascular disease. Unfortunately the conclusions are conflicting. The cooperative study of seven clinical centers coordinated by the Department of Neurology, Massachusetts General Hospital, was reported in 1962.[8] A total of 443 patients were assigned to the anticoagulant or nonanticoagulant therapeutic groups on a statistically random basis by means of sealed envelopes. The results by diagnostic categories are as follows:

1. *Transient ischemic attacks.* They defined these attacks as episodes of cerebral ischemia lasting no longer than 1 hour and clearing without significant residuum. Two of the twenty patients in the control group and five of the twenty-four in the treated group expired. Two of the deaths in the treated group were due to intracerebral hemorrhage. Progression or recurrence of infarction occurred four times in the control group and only once in the treated group. Approximately 547 episodes of transient cerebral ischemia occurred in the control group and approximately 25 in the treated group.

2. *Thrombosis in evolution.* In these patients the neurological deficit was progressing in a stepwise manner. In the control group 17 of 67 patients died, and in the treated 13 of 61. Two of the latter died as the result of a fatal hemorrhage. When the difference in the number of patient months in the two groups was allowed for, the mortality was slightly less in the control group than in the treated. Cerebral infarction accounted for 8 deaths in the control group and 5 in the treated. Progression of infarction occurred in 21 patients in the control group and in only 8 patients in the treated group.

3. *Thrombosis completed stroke.* Fifteen of the 60 patients in the control group and 18 of the 72 in the treated group died. In the treated group 3 patients died of intracerebral hemorrhage and two patients died of gastrointestinal hemorrhage. An additional patient death was contributed to by hemorrhage. Progression of infarction occurred in 5 cases in the control group and in 12 in the treated group. In the treated group there were 31 hemorrhagic episodes.

4. *Thrombosis or embolism.* This group was

comprised of those patients in which they could not clinically differentiate between thrombosis and embolism. Seven of the 56 patients in the control group and 10 of 53 in the treated group died. However, this difference disappears when allowance is made for the greater number of patient months in the control group. There were 3 fatal hemorrhagic complications in the treated group. The incidence of progression of infarction was not significantly different in the two groups. The treated group had 2 instances of nonfatal intracerebral hemorrhage.

5. *Embolism.* Seven of the 16 control patients and 6 of 12 treated patients died. The incidence of recurrence of infarction was the same in the two groups.

An analysis of the mortality of all groups together, corrected for the number of patient months, revealed that the death rate was higher in those receiving anticoagulants than in the control group. Recurrence of transient ischemic attacks and progression of infarction were significantly reduced in cases of transient cerebral ischemia and thrombosis in evolution in those patients on anticoagulants. However, no such beneficial effect was demonstrated on those patients with thrombosis or embolism. They felt that no conclusions could be drawn from the embolism study. In the entire study there was a total of 78 bleeding episodes. Twenty-eight of these hemorrhagic complications were fatal or severe and 7 fatal hemorrhages occurred in the first 6 months of therapy. It was noted that hypertension appeared to be an added risk of hemorrhagic complication. Their conclusion was that anticoagulants do not reduce the mortality in thrombotic cerebrovascular disease and are beneficial only in reducing the number of transient cerebral ischemic attacks and aborting the progression of infarction in thrombosis in evolution. However, the mortality rate in these two groups was not significantly different in the anticoagulated and control groups either. No conclusions were made regarding embolism.

The conclusions of this study are in agreement with those of the Veterans Administration cooperative study,[9] and at variance with those of Groch and associates,[10] and Siekert, Millikan and Whisnant.[11] In the latter study the treated and control groups were not determined by randomization.

Surgery

In 1961, DeBakey and his group[12] reported their surgical treatment of patients with cerebral arterial insufficiency associated with extracranial arterial occlusive lesions. Of the 49 patients with surgery for carotid insufficiency manifested by transient cerebral ischemia, 46 were asymptomatic at the time of discharge from the hospital. Of the 34 patients having operations before January 1, 1960, 31 continued to be asymptomatic at the time of the report in 1961. Two patients died as a result of complications related to the operation and one patient died from heart disease. Improvement or complete relief of symptoms occurred during the period of hospitalization in 10 of 12 patients with persistent progressive symptoms from carotid insufficiency. These were apparently patients with a stroke in evolution. Of the 10 patients having surgery before January 1, 1960, 5 were improved and 4 were asymptomatic. One patient died postoperatively and one patient remained unchanged. All 13 patients who had vertebral artery surgery because of vertebro-basilar insufficiency manifest by transient ischemic attacks became asymptomatic in the immediate post-operative period. The two patients who had vertebral artery surgery because of a stroke in evolution also became asymptomatic. Benefit was noted from carotid surgery in some patients with vertebro-basilar insufficiency when the vertebro-basilar lesion was inoperable. This was in patients with atheromatous lesions of the carotid arteries and the mechanism appeared to be the increase of collateral blood flow. Prophylactic vascular surgery was performed on patients who were asymptomatic at the time of surgery and on patients who had sustained a complete stroke at the time of surgery. The conclusions which can be derived from this study are limited by the fact that this was not a randomized controlled evaluation. Additional, similar studies have been reported. At the present time a cooperative study is being undertaken to attempt to further evaluate the place of extracranial vascular surgery in the treatment of occlusive cerebrovascular disease.

Lysis of thrombi and emboli

In 1964, Atkin and his group[13] reported the lysis of a thromboembolic clot which was occluding the right middle cerebral artery. They used fibrinolysin. This lysis was accomplished within 15 hours following the onset of symptoms and was demonstrated by repeat carotid arteriography at this time. At the time therapy was started the patient had a left hemiplegia, and on the day following therapy she could move her left extremi-

ties. Eighteen months later she walked quite well, but continued to have some paresis of the flexor muscles of the left forearm.

Correction of hypotensive episodes

Orthostatic and drug induced hypotension result in episodes of cerebral ischemia. Correction of the dosage or discontinuing the drug in the latter group is the treatment of choice. I will not review the treatment of orthostatic hypotension.

Conclusions

A beneficial effect from vasodilators has not been conclusively demonstrated in patients with cerebrovascular disease. Although some agents, as outlined above, appear to increase cerebral blood flow under certain circumstances, they have not been adequately evaluated by clinical trials. Anticoagulants have been evaluated by two well controlled cooperative studies and appear to be beneficial only in decreasing the number of episodes of transient cerebral ischemia and aborting the development of a thrombosis or stroke in evolution. However, it must be noted that even in these two groups of patients the mortality is not decreased by the use of anticoagulants and hemorrhagic complications are a prominent factor. The evaluation of patients with cerebral embolism was not conclusive. The place of surgery in the treatment of occlusive cerebrovascular disease has been incompletely evaluated. It appears that surgery of the neck and thoracic vessels supplying the brain in selected cases is probably beneficial. However, the criteria for patient selection and the extent of benefit are incompletely understood.

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Conservative Operative Treatment of Tubal Pregnancy

Skulj et al (5700 N Ashland Ave, Chicago), *Fertil Steril* 15:634-639 (Nov-Dec) 1964

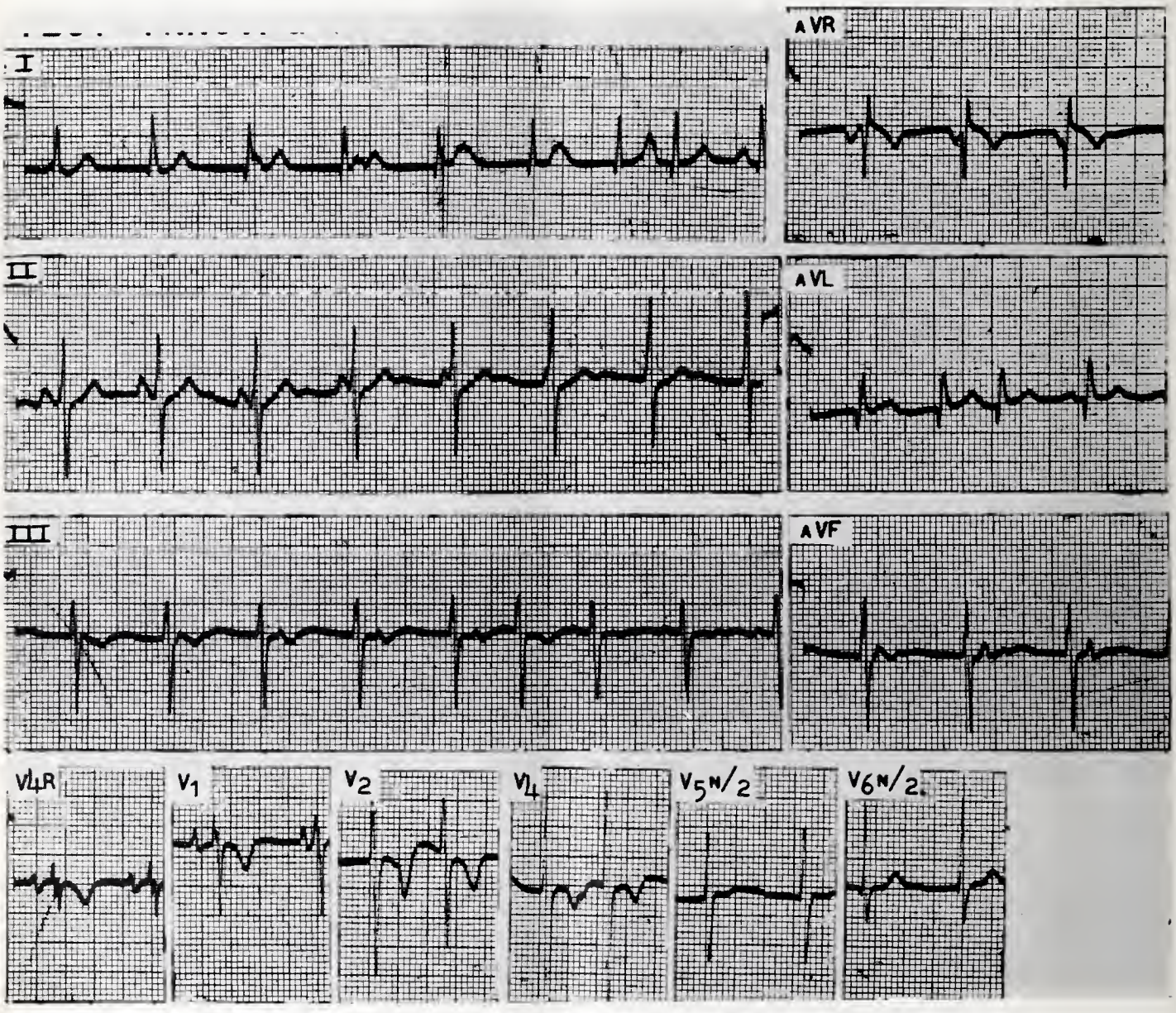
Conservative surgery preserving the uterine tubes in tubal pregnancy attempts to increase the reproductive ability of the patient. Application of such a treatment in indicated cases, with special care of the nonpregnant oviduct and adequate intraoperative and postoperative treatment, offers the best method of treatment. Of 92 cases of tubal pregnancy treated conservatively and tested for tubal patency three to six months after operation, bilateral patency was achieved in 82.6%, unilateral patency in 6.5%, and tubal occlusion in 10.9%. The bilateral tubal patency in cases with hydrotubation in postoperative care was 86.6%. Of 23 intrauterine pregnancies (25% of the total), ten followed a plastic procedure on the remaining uterine tube. There was only one recurrent tubal pregnancy.

ELECTROCARDIOGRAM OF THE MONTH

WHAT IS YOUR INTERPRETATION?

AGE: 11 SEX: M BUILD: SLENDER BLOOD PRESSURE: 110/84
CARDIAC DIAGNOSIS: Congestive Heart Failure
OTHER DIAGNOSES:
MEDICATION: Digoxin .25 mg. b.i.d., Diuril 250 mg. b.i.d., KCl 300 mg. t.i.d.

ANSWER ON PAGE 465



The Department of Medicine, University of Arkansas Medical Center
James S. Taylor, M.D., Professor of Medicine

WHAT IS YOUR DIAGNOSIS?

Prepared by the
Department of Radiology, University of Arkansas
School of Medicine, Little Rock

ANSWER ON PAGE 465



No. 11-32-60 35 year-old female

HISTORY: This patient's history was that of multiple fractures over the past fifteen years. She was admitted for fractures of both femurs which occurred with very minor trauma. Physical examination revealed marked skeletal deformities of the long bones, face and chest.



PUBLIC HEALTH AT A GLANCE

HEALTH MOBILIZATION PLANNING

The critical situation which has existed throughout the world since World War II has placed many unusual demands and requirements on our nation. One of the most urgent demands of this nature is the need for effective disaster preparedness by the various states. In Arkansas that phase of disaster preparedness with Civil Defense responsibility which pertains to health and medical services is a State Department of Health task.

It is necessary for Health Mobilization Planning to coordinate its activities with the U.S. Public Health Service, State Civil Defense and Disaster Relief, and the State Emergency Resources Planning Committee. Health Mobilization Planning concentrates its efforts mainly on the three programs briefly described in this paper.

Medical Self-Help is a program of advanced first-aid which is designed to provide information and training to the people of the United States that will help prepare them for survival in a time of local, state, or national disaster when the services of a physician or other allied health personnel are not available. The Medical Self-Help Training Course was developed by the Public Health Service with the cooperation of the Office of Civil Defense. It is endorsed by the American Medical Association and many other national health organizations. Arkansas is one of the leading states in the Nation which provides this training for its citizens.

There are seventeen Packaged Disaster Hospitals pre-positioned in various parts of the state that are the responsibility of the Arkansas State Department of Health. These hospitals contain the equipment necessary to set up a 200-bed disaster hospital in a school or other suitable building and sufficient expendable supplies to keep it in operation for about 30 days. The utilization plans are complete on twelve of these hospitals and five are in the process of being prepared.

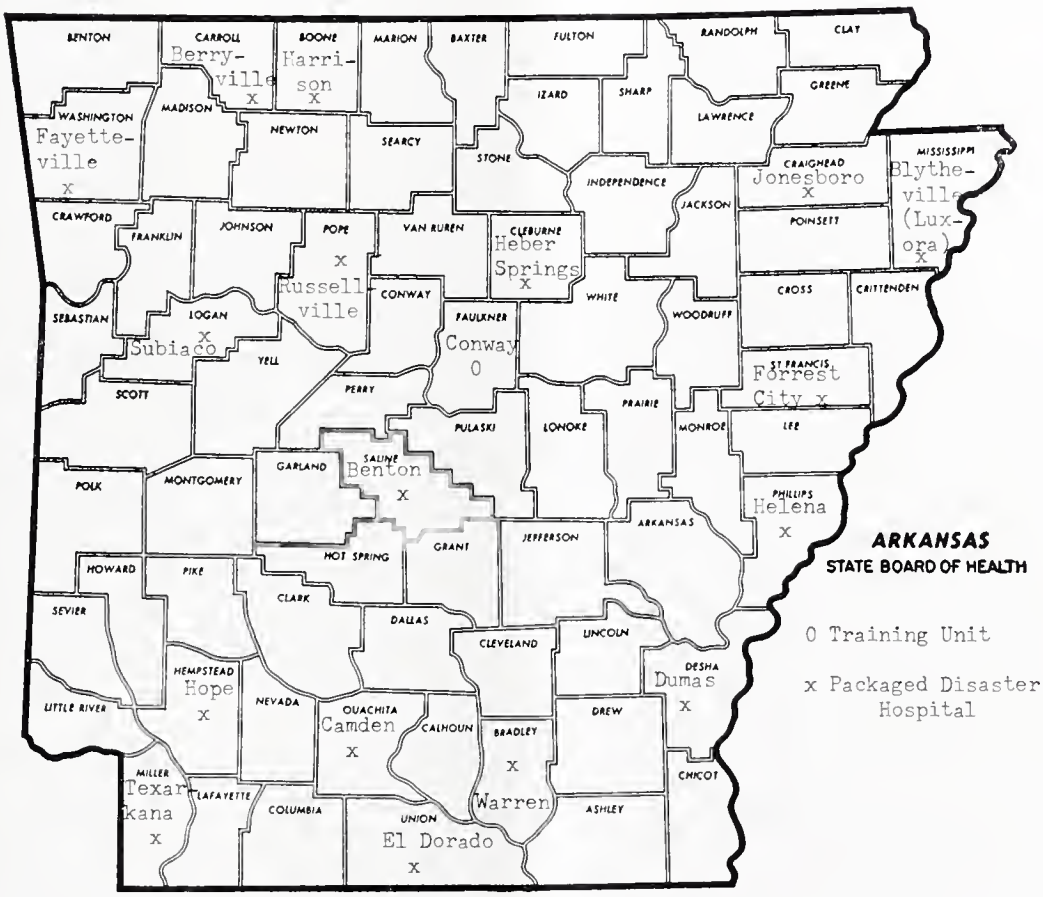
Plans for training the communities where these Packaged Disaster Hospitals are stored are being developed. In connection with this type of training, a very successful Stateline Training Course which included participation from all areas of the state was conducted in May, 1964, by the Arkansas State Department of Health in cooperation with the University Medical Center, Arkansas Medical Society, Arkansas Dental Association, Arkansas Nurses Association, Arkansas Hospital Association and the State Civil Defense Agency. The course consisted of lectures on expanded medical care; a representative portion of the hospital was set up and its use demonstrated to about 750 interested health-oriented individuals. These Packaged Disaster Hospitals may very well prove to be a real asset to a community or state in the event of a large scale disaster.

The Task Group for Health and Medical Resources which must provide for plans, policies, guidance, and actions that are necessary if our health resources meet the needs in Arkansas in a nuclear attack emergency is assigned to the Arkansas State Department of Health for implementation. The first meeting of the Task Group for Health and Medical Resources has made satisfac-

tory progress. The medical, dental, hospital, and nursing associations have representation on this Task Group. In addition, the associations will be furnished periodic progress reports relative to the work accomplished.

Health Mobilization Planning of the Arkansas State Department of Health is not unmindful of the importance and seriousness of the responsibilities which constitute all disaster assignments.

PRE-POSITIONED PACKAGED DISASTER HOSPITALS



Health Mobilization Planning
March 5, 1965



EDITORIAL

OF STOMACH, SKIN AND BILE

Alfred Kahn, Jr., M.D.

The differences in gastric and duodenal ulcers have been a matter of much interest. For example, duodenal ulcers are associated with a high output of free hydrochloric acid and gastric ulcers are associated with high, normal, or low acid output. A partial explanation of this is found in the work of Emas and Fyro (Gastroenterology, p. 1, vol. 46, January, 1946) who studied the hormone gastrin. Gastrin causes the release of hydrochloric acid; it is a protein-like chemical found in the gastric antra. Emas and Fyro assayed gastrin by determining the secretory response in unanesthetized cats injected with the unknown material.

The authors assayed the antral mucosa from 10 patients with duodenal ulcer, 11 for gastric ulcer, 2 for pyloric ulcer, and 1 for gastric cancer. They found that there was three times as much gastrin activity in the antra of patients with duodenal ulcer than in the antra of patients with gastric ulcer. The authors concluded that this suggested a different genesis for gastric and duodenal ulcers. The excessive gastrin found in duodenal ulcer patients does not necessarily prove that this is the paramount point in the production of ulcers, as other investigators have shown that peptic ulcer patients often have a reduced resistance or barrier to the action of hydrochloric acid.

In the field of dermatology Kierland (Mayo Clinic Proceedings, 39, p. 53, January, 1964) discusses the collagenoses which are described as being transitional forms of lupus erythematosus, dermatomyositis, and scleroderma. This is not an exercise in semantics; in this discussion the author points out the combinations, associations, and transitional forms of the so-called collagen diseases. Statistics indicate that lupus erythematosus and dermatomyositis co-exist but scleroderma and lupus erythematosus seldom co-exist; dermatomyositis co-exists often with scleroderma. The author has assembled an excellent chart of symptoms and signs comparing lupus erythematosus, dermatomyositis, and scleroderma; all three disorders have frequent Raynaud's Phenomena, arthralgia, myalgia, cardiac involvement, and a predilection for women. The total picture of any one collagen disease is seldom present in 1 patient. Kierland feels that some of the three diseases mentioned above blend into Sjogren's syndrome, rheumatoid arthritis, vasculitis, etc. However, it is pointed out that these disorders may not share a common etiological factor despite the fact that they all have varying types of connective tissue lesions with variable amounts of vascular involvement. Auto-immune mechanism as a cause of these disorders is under study by many workers; it certainly seems to play a part in lupus erythematosus. Dermatomyosis is associated with cancer frequently as compared to lupus erythematosus.

Considerable studies have been made in the understanding of bilirubin metabolism. For example, one of the main areas of ignorance concerned the van den Bergh test. Research in this field has shown that bilirubin becomes soluble by esterification forming bilirubin glucuronide. The metabolism of bilirubin in the fetus has recently been studied by Schenker, Dawber, and Schmid (The Journal of Clinical Investigation, Volume 43, p. 32, January, 1964). Bilirubin is formed by the fetus and is found in fetal plasma, meconium, and other sites. The authors felt that the fetus probably disposed of bilirubin through the placenta as the fetal blood bilirubin is low. This is especially interesting as the fetal liver is very poor in its ability to form glucuronide which is a necessary step to normal hepatic elimination of bilirubin;

they also point out that unconjugated bilirubin rises sharply after birth.

In order to study bilirubin metabolism in the fetus Schenker *et al* obtained crystalline, unconjugated bilirubin tagged with radioactive carbon-14; conjugated bilirubin tagged with C-14 was obtained by injecting the unconjugated bilirubin into guinea pigs or rats and obtaining the excreted conjugated form from a biliary fistula. The two types of bilirubin were injected into guinea pig fetuses still attached to the mother by the placenta.

Schenker found that the "Unconjugated bilirubin-C rapidly disappeared from the fetal plasma, and 52 to 66% of the administered radioactivity was excreted in the maternal bile within 2 hours. By contrast, disappearance of conjugated bilirubin-C was slower, and less than 4% of the injected pigment dose appeared in the maternal bile. On simultaneous administration of unconjugated bilirubin-C and albumin-I to the fetus, only the pigment was transferred across the placenta, whereas virtually no labeled albumin was detectable in the maternal circulation. In the fetus, bilary excretion of unconjugated and conjugated bilirubin-C was impaired to a similar degree, suggesting that, in addition to deficient conjugation, the fetal liver also exhibits an excretory defect.

The authors caution that these animal experimentation may not be entirely accurate as a basis for human physiology.

ANSWER—What's Your Diagnosis?

DIAGNOSIS: Hyperparathyroidism. At surgery a 5 gram adenoma was found in the right inferior parathyroid gland.

X-RAY FINDINGS: There is very marked osteomalacia with almost complete loss of normal trabecular pattern. Many cyst-like areas of demineralization are seen. There is a nondisplaced pathologic fracture of the left ulna.

ANSWER—Electrocardiogram of the Month

INTERPRETATION:

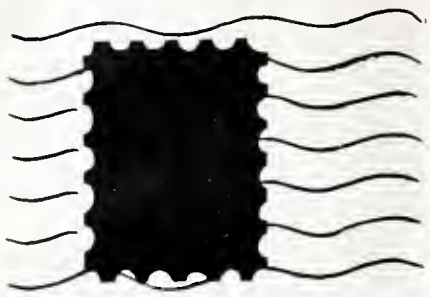
Rate: A: 88 Rhythm: A-V Dissociation with interference
V: 93

PR: — QRS: .07 QT: .32

ABNORMAL. P waves are occurring at a slightly slower rate and independent of QRS complexes which are of normal duration and slightly faster. Precordial leads suggest biventricular hypertrophy.

COMMENT: In this tracing separate centers are controlling atria and ventricles with occasional response in the ventricles to the atrial pacemaker, as in I, aVL, etc. A-V dissociation with interference is a relatively uncommon arrhythmia.

LETTERS



TO THE EDITOR

Dear Dr. Kahn:

Please use this letter for publication if you think it would benefit members of the Arkansas Medical Society.

Fellow Members of the Arkansas Medical Society, may I have your attention for just a few minutes?

About four weeks ago I received information from our own Welfare Department indicating that the physicians of Arkansas would be asked to sign a statement of Compliance with the Civil Rights' Act of 1964 in order to continue to get payment for the office visits on Kerr Mills patients. A few days later I contacted Mr. Jim Phillips at his office (in fact, I made a visit to his office and talked to him personally) to discuss this statement with him. Mr. Phillips gave me the first draft, which he indicated was in the rough, of the statement that the physicians of Arkansas would be expected to sign in compliance with the Civil Rights' Act of 1964. He also gave me some information of the section which required this signature. He further stated that the Welfare Department was required to file a similar statement with the Department of H.E.W. before the money could be obtained from Washington to carry out the Kerr Mills Program in Arkansas. Just yesterday, March 3, 1965, Mr. Phillips told me by phone that this statement would not be sent out at this time because there was some discussion as to whether the physicians would be required to sign it or not.

Now all of you who have been practicing in Arkansas for even one or two years know that there is very little, if any, discrimination whatever in the physicians' offices of the state of Arkansas. We have been trained to take care of sick people regardless of their race, creed, color, or national origin. I feel sure that we will continue to do this very thing. However, it seems to me that requiring a signature other than just a signature on a statement of charges to be sent to the Federal Government is a reflection on the good citizenship of the physicians of Arkansas. We have always been good citizens who followed the laws of the land, and we will continue to do so. I do not believe it will be necessary for each physician of Arkansas to sign a statement to comply with the Civil Rights' Act of 1964 since it is the law of the land. For at least that one reason, I object very much to being required to sign a statement that I will comply with the Civil Rights' Act of 1964 in order to draw any finances from the Federal Government in payment for my services.

There is another reason, however, that I object to signing such a statement as has been stated above. Signing such a statement for the Federal Government just puts them in a little bit more control of the private practice of medicine. I feel capable of running my own office lawfully and do not need the coercion that is brought about by signing any statement for the Federal Government in order to follow the law.

There is another aspect of the publicity concerning the Civil Rights' Act of 1964 which at first glance may not seem to be relative to the practice of medicine; but, in my opinion, it is. In the Arkansas Gazette of February 9, 1965, there was printed an article concerning the United Fund of Pulaski County. This article stated the United Fund would be required to adopt policies of non-discrimination as would all the agencies receiving support from that fund. The reason given for this requirement was *not* that the United Fund was getting any *federal money* but, and I quote, "The United Fund gets about $50,000.00 a year from *federal employees*". Now, if this policy is correct, it indicates that even employees of the Federal Government would be told not to spend their money with agencies or individuals who will not sign the non-discrimination agreement of the Civil Rights' Act of 1964. Of course the question arises as to when an employee's money is his own. We have always assumed it to be his own when he gets his check, cashes it, and puts it in his pocket. However, if this philosophy holds true, and if the Federal Government does finally require physicians to sign the non-discrimination agreement in order to draw federal money, then the physicians of Arkansas who do not sign that non-discrimination agreement will not be able to accept any money from any federal employee or anyone who

draws any money that even contains a small percentage of federal money. This would, of course, include United States Government employees and anyone who receives even a small percentage of his salary or wages from a United States governmental source. How far down the line will the Federal Government call their money United States Government money? If it is still Federal Government money after the employee earns it, will it still be Federal Government money after the second or third employee works for it?

If all of the above mentioned people do come under this Federal money and can only use a physician who has signed a non-discrimination statement of the Civil Rights Act of 1964, a great slice of our private practice of medicine will be involved. I wonder if the statement is being withheld now until the stakes (amount of money involved) grows great enough that the physician will be forced financially to sign. I personally, within the next few weeks, must make up my mind as to whether I shall bow down to the Federal Government and sign the non-discrimination agreement or continue treating my patients, regardless of race, creed, color, or national origin, as an independent personal physician. You will have to make the same decision. My only admonition is to weigh the facts of the present and the possibilities of the future carefully and "Beware" before you sign any such statement for the Federal Government.

Yours truly,
C. R. Ellis, M.D.
President
Arkansas Medical Society

MEDICINE IN THE NEWS

Memorial and Honor Fund
University of Arkansas School of Medicine
Winston K. Shorey, M.D.
Dean, School of Medicine

In the April issue of this Journal announcement was made of the Memorial and Honor Fund which Dr. C. Lewis Hyatt, President of the Arkansas Medical Society, has initiated for the University of Arkansas School of Medicine. On behalf of the administration and faculty of the Medical School, this is written to express grateful appreciation to Dr. Hyatt for his vision and initiative and to the Arkansas Medical Society for its support of Dr. Hyatt's concept.

Dr. Hyatt has conceived and implemented a program which provides opportunity for an individual to be honored or memorialized through the Arkansas Medical Society to the benefit of the University of Arkansas School of Medicine. In the words of Dr. Hyatt this fund also will serve to represent the moral support of the Medical Center by members of the Arkansas Medical Society.

A memorial or honor gift may be sent to the University of Arkansas Medical Center in care of the Dean of the School of Medicine. Appropriate acknowledgment will be made to the family of the individual being memorialized or to the individual being honored as well as to the donor. Further acknowledgment and an expression of appreciation will be made in a subsequent issue of the Journal of the Arkansas Medical Society. A book of appropriate design will be maintained at the Medical Center in which will be entered the names of individuals honored or memorialized and the donor.

Donations made to this fund will be allowed to accumulate until a medical school need of significance can be financed from it. When such a need becomes a reality through the resources of this fund, recognition will be made in the Journal of the Arkansas Medical Society. The concept of combining memorial and honor gifts into a single fund provides an excellent medium through

which a donor can participate in the support of major identifiable activities at the Medical School. In the past occasional memorial gifts have been gratefully received. These have been used to the benefit of the school, but frequently it is difficult to identify precisely the resulting benefits. On the other hand, the combined efforts of many donors can support an easily identified activity within the Medical School.

Future public recognition of memorial and honor gifts in the Journal of the Arkansas Medical Society will not include any reference to the size of the donation. However, we feel that the generosity of Dr. Hyatt, as well as his vision in establishing this fund, deserves a special expression of appreciation. His initial gift which established the fund was made as a memorial to his brother and associate; a philanthropist, gentleman, and beloved family physician; Dr. Robert F. Hyatt, Jr., late of Monticello, Arkansas. This gift was $1,000 and was received with deepest appreciation.

Annual Medical School Expenditures for Sponsored and Regular Operating Programs

An accelerated increase in the level of total medical school expenditures has occurred since World War II. The differential rates at which expenditures for regular operating and sponsored programs have increased in the last seven years are presented in this Datagram.

Regular operating program expenditures are made mainly from intramural funds of the medical school and university for support of the basic education program, and are under the control of the medical school and its sponsors. These funds include appropriations, endowment income, tuition, unrestricted gifts, and income derived by the school from some service functions. Although regular operating expenditures have nearly doubled in this period, they have not increased as rapidly as expenditures for sponsored programs which have almost quadrupled in the same period.

Funds medical schools receive from extramural federal and non-federal sources are provided for research, research training, and special programs. These funds are referred to as sponsored funds since the use of these funds is designated by the sponsor and they must be spent in compliance with the sponsor's restrictions.

All sponsored program expenditures have shown an average annual increase of 20 per cent in the period 1956-57 to 1962-63. The proportion of total medical school expenditures allocated to sponsored programs has increased from 39 per cent to 58 per cent. Expenditures from such restricted funds are divided between "sponsored research programs" and "other sponsored programs." "Other sponsored programs" support selected teaching and training projects, mostly research training.

Sponsored research programs, while expanding at close to the same rate as other sponsored programs, now account for the largest annual dollar expenditure in the schools of medicine. Whereas in 1956-57 this item accounted for 31 per cent of total expenditure, by 1962-63 it had grown to 44 per cent of total expenditure.

The Month in Washington

The American Medical Association supports a five-year extension of the Vaccination Assistance Act.

Dr. James Z. Appel, Lancaster, Pa., president-elect of the AMA, and Dr. Robert C. Long, Louisville, Ky., a member of the AMA board of trustees, presented the AMA's position on the vaccination program and three other health care bills at a hearing of the house commerce committee.

"Medicine, on the national, state, county, and community levels, has consistently worked to bring to its patients the benefit of advances in medical research and development," Dr. Appel said. The physicians of America and the Public Health Service have long been partners in the fight against disease and in the campaign to eradicate contagious disease wherever it is found.

"The Vaccination Assistance Act of 1962 was enacted (with AMA support) in recognition of the fact that there existed all over the country pockets of people, particularly children, who were not utilizing, or who did not have available to them, vaccines for the prevention of poliomyelitis, diphtheria, whooping cough, and tetanus. The Act authorizes grants to the states to enable them to engage in a concentrated campaign to provide immunization to people in these pockets. We believe that substantial progress has been made, and we recommended the program's continuation . . .

"Medical research has since (1962) provided an effective vaccine against measles. An intensive vaccination program directed at preschool age children can dramatically lessen the incidence of the disease and reduce or eliminate the serious residual effects which are sometimes attendant

with the disease. We therefore believe that it is most fitting that in extending the Vaccination Act, H.R. 2986 include measles in the authorized vaccination programs."

The AMA also supported a five-year extension of the federal grant program for family health services for migratory workers.

The AMA opposed legislation that would authorize the Public Health Service to construct and operate regional or national research facilities. Dr. Appel said:

"We fail to see how research can be classified as 'regional' or 'national' or 'local'. Research in cancer which may be carried on in a medical school research facility in a midwestern city is as 'national' in character as if it were carried on in a city on the west coast. Research in heart disease, or in any of the many areas of interest to medical science, has no geographic bounds . . .

"We believe that the country will best be served through the utilization of the experience and knowledge of institutions which are currently engaged in medical research. Their record is a good one. We see no reason for beginning a new program which would require many months or years and large sums of money, and which would compete for scarce skilled research manpower . . ."

Dr. Long outlined the AMA's opposition to use of federal matching funds for initial staffing of community health centers.

"We believe that once the center has been constructed, the community should assume the remaining responsibility," Dr. Long said.

"The providing of medical care is essentially a community affair. The federal government's participation in a matching grant program stimulates the start of the local program and helps the state or community overcome the initial heavy financial burden. Most often, the problem initially facing a community is the one-time large construction-cost expenditure. Assistance here, by way of federal matching grants, is, in our opinion, appropriate. The funds for staffing, however, should remain the sole responsibility of the local community. There does not appear to be any justification for federal participation in financing this type of expense, nor is it likely to phase out, as stated in the bill, once the federal government has assumed this responsibility. If the community cannot, or will not, support the program from its beginning years, it is not likely to do so later."

As for legislation that would authorize federal mortgage insurance and loans to help finance the cost of constructing and equipping facilities for the group practice of medicine and dentistry, the AMA said:

"We do not believe that this proposal for federal subsidy can be justified. Special preference to physicians who will be eligible for the loan or mortgage insurance under this measure can only be supported on the basis that adequate sources of financing do not exist through banks, insurance companies, and other agencies. We know of no such evidence. It has not been demonstrated that this legislation is required to expand currently available public or private funds to finance or insure the construction and equipping of medical or dental groups . . .

"The bill specifies that the surgeon general shall give preference to, in effect, closed panel prepaid group health plans. This priority discriminates against other physicians in private practice either as solo practitioners or in partnerships or groups."

* * *

The AMA also has emphasized to Congress that the Johnson Administration's plan for a network of regional medical complexes could have "significant impact" upon the practice of medicine in the United States.

Dr. F. J. L. Blasingame, executive vice president of the AMA, advised Sen. Lister Hill (D., Ala.) chairman of the senate labor and public welfare committee, that the AMA could not testify on short notice on S. 596, the "Heart Disease, Cancer and Stroke Amendments of 1965."

Despite the far-reaching potentialities of the legislation, Hill unexpectedly called two days of hearings on short notice in February.

Blasingame said in a letter to Hill:

"We regret that we found it necessary to inform you that we could not present the Association's views at that time. Because of the short notice given of the hearings, it was not possible to accord this important legislation the proper measure of consideration which it warrants.

"We are sure that this committee must appreciate the tremendous significance of the legislation before it. The purposes of it, namely to assist in combating heart disease, cancer and stroke, and other major diseases, are most laudatory. The eradication or control of such diseases, as well as of all other medical afflictions of man, has been,

and continues to be, an active concern and goal of medicine.

"We deem it imperative that S. 596 be given consideration commensurate with the significant impact which it could have upon the course of medicine and upon the health needs of our citizens.

"The Association has initiated steps within its organization to give to S. 596 a most careful analysis of its intent and the manner in which it is sought to be implemented and achieved. We cannot urge too strongly to this committee that this legislation raises considerations with far-reaching ramifications and with a potential of far-reaching effects upon the nation's health needs. The course to be charted must represent the most judicious employment of the nation's medical resources."

The bill would amend the Public Health Service Act by adding a new title which would authorize the appropriation of $50 million for fiscal 1966, and such sums as may be necessary for the next four years, to be used as grants to assist public or private nonprofit universities, medical schools, research institutions, and other public or nonprofit institutions and agencies in the planning, establishing, and operating of regional medical complexes for research and training and for demonstrations of patient care in the fields of heart disease, cancer, stroke, and other major diseases.

The Administration has refused to give Congress the total amount of planned expenditures on the program, if it is approved by Congress, over the five-year period. But Administration sources estimated $1.2 billion when the legislation was introduced.

* * *

President Johnson has named Dr. Luther L. Terry for another four-year term as surgeon general of the Public Health Service.

A 53-year-old native of Alabama, Terry has been with the PHS since 1942 when he became assistant director of the National Heart Institute. The late President Kennedy appointed him surgeon general in 1960.



Annual Otolaryngologic Assembly

The Annual Otolaryngologic Assembly of 1965 will be held October 30 through November 5, in the new Illinois Eye and Ear Infirmary at the Medical Center, Chicago. The Department of Otolaryngology of the University of Illinois College of Medicine offers a condensed postgraduate basic and clinical program for practicing otolaryngologists under the direction of Dr. Emanuel M. Skolnik. It is designed to bring to specialists current information in medical and surgical otorhinolaryngology.

Scholarships for Specialized-Training in Rehabilitation Fields

The National Society for Crippled Children and Adults announces the availability of scholarships for professionally qualified persons interested in short-term advanced specialized-training in rehabilitation fields. These scholarships are for courses of three months or less which have the guidance and participation of a member of the American Academy for Cerebral Palsy. Funds for these awards have been made available by Alpha Chi Omega, national women's fraternity.



Dr. William McKinley Parker

Dr. William McKinley Parker, aged 65, of DeValls Bluff, died February 13, 1965, at a hospital in Little Rock. Dr. Parker was a native of Prairie County, and had been a physician and surgeon at DeValls Bluff for 36 years, except for three years at the Veterans Administration Hospital in New York and two and one-half years as a wartime doctor in Italy during World War II. He was a Baptist; a member of Lonoke County Medical

Society, Arkansas Medical Society and the American Medical Association. Survivors include his widow, two brothers and a sister.

RESOLUTIONS



Resolution

Whereas, God in his infinite mercy has seen fit to call from our midst Dr. Henry Manford Keck, and,

Whereas, Dr. Keck had faithfully served his patients in the community at large throughout his many years of medical practice, and,

Whereas, Dr. Keck during his years of practice had reflected throughout his entire medical career the highest ideas of the profession, and,

Whereas, the Sebastian County Medical Society mourns his loss,

Therefore, be it Resolved by the Sebastian County Medical Society in regular meeting assembled on March 9, 1965 hereby adopts these resolutions and directs that a copy be spread on the minutes of the Society and that a copy be furnished to the family and that a copy be published by the Journal of the Arkansas Medical Society.



PERSONAL AND NEWS ITEMS

Mrs. Long Receives Award

Mrs. C. C. Long was presented the "Woman of the Year" award by the Progressive Farmer Magazine at the Rural Community Improvement banquet in Little Rock in March. Mrs. Long, whose husband is Dr. C. C. Long of Ozark, is a leader in the Arkansas Medical Society Auxiliary and was one of the state judges in the Rural Community Improvement (RCI) contest which is co-sponsored by the Arkansas Medical Society. The community of Promise Land in Ashley County was named winner of the Division II clubs and Center Grove in Grant County was selected winner in Division I clubs.

Mid-Central Orthopaedic Meeting Held

The Mid-Central States Orthopaedic Society met in Hot Springs in March. Dr. Thomas M. Durham of Hot Springs is president and the Arkansas group were hosts to the meeting. The speakers on opening day were: Dr. Richard Logue, Dr. Samuel B. Thompson, Dr. Leighton Millard, Dr. F. Walter Carruthers, Dr. Horace R. Murphy, and Dr. Kenneth G. Jones, all of Little Rock, and Dr. Stuart B. McConkie of Hot Springs. Other speakers during the meeting were: Dr. Thomas M. Durham, Dr. Gerald Fisher, Dr. Shirley McCleur and Dr. DuBose Murray of Hot Springs; Dr. William E. Knight, Dr. Byron Brown, Dr. Hoyt Kirkpatrick and Dr. Raymond C. Goodman, all of Fort Smith; Dr. Ben Drompp, Dr. H. Austin Grimes, Dr. Walter Selakovich, Dr. Charles McKenzie and Dr. John Hundley of Little Rock.

Dr. Guenthner Attends Meeting

Dr. John F. Guenthner of Mountain Home, a member of the Arkansas State Medical Board of Examiners, attended the Federation of Medical Boards of the United States meeting in February at Chicago. The meeting was held in conjunction with the annual Congress of Medical Education of the American Medical Association.

Dr. Smith Joins Clinic

Dr. A. C. Smith, formerly of Pine Bluff, has joined the staff of the Utley-Ball Clinic in Blytheville. He was in private practice at Chelsea, Oklahoma, before coming to Arkansas.

Dr. Hardin Joins Staff

Dr. Robert P. Hardin has joined the medical staff of St. Michael's Hospital in Texarkana and

he will be associated with Dr. J. K. Laws in the Department of Anesthesiology. Dr. Hardin is a native of Little Rock and he attended the University of Arkansas Medical School.

Dr. McConnell Honored

March 22nd was "Dr. S. P. McConnell Day" in Booneville. The occasion was sponsored by the Booneville Chamber of Commerce and featured a banquet with a capacity crowd of Booneville citizens and members of the medical profession from Fort Smith, Paris, Huntington and Booneville.

Among the special guests at the banquet were Dr. Kenneth Thompson of Fort Smith who spoke on Dr. McConnell's influence in medicine; Bishop Paul Galloway of Methodist Churches of Arkansas, who spoke on Dr. McConnell's contributions in the religious field; Logan County Representative Ray Dunn of Booneville, who discussed the doctor's accomplishments and contributions in civic affairs. General John Paul McConnell, Air Force Chief of Staff, was a special guest at the banquet honoring his father.

Dr. McConnell was presented a color television set from the citizens of Booneville in recognition of his 59 years of service to the citizens of Booneville and South Logan County.

Operation to Separate Siamese Twins

Dr. Franklin J. Harberg, former student and resident at the University of Arkansas School of Medicine, along with three other pediatric surgeons, performed the operation to separate the Webber Siamese twins in Texas Children's Hospital. This is the 10th such operation attempted in the United States. In only one case did both twins die. In two others, one of the twins died. The Webber twins are responding as expected in the recovery room of the hospital at this time.



PROCEEDINGS OF SOCIETIES

Mississippi

The Mississippi County Medical Society will supervise a birth control clinic with the Arkansas State Health Department assisting in the program. Free contraceptive devices will be given to patients who are unable to pay for them.

Baxter County

The Baxter County Medical Society met at the home of Dr. James C. Dunbar on February 19, 1965. Dr. Dunbar gave a slide presentation on "The Role of the Chest X-Ray Film in Cardiology." He also presented a recording on "The Transplantation of Organs in Russia." Dr. Max Cheney presided.

Union

Dr. C. Randolph Ellis, President of the Arkansas Medical Society, was in El Dorado, Arkansas, Monday, March 1, to speak to the Union County Medical Society. Dr. Ellis made a special visit there to discuss with the doctors the problems in Arkansas pertaining to medicine. He especially stressed the medical problems in the University of Arkansas Medical Center. The meeting in El Dorado was held at the Country Club, with Dr. A. J. Baker, President of the Union County Medical Society, presiding.



NEW MEMBERS

DR. J. C. DEVINE is a new member of the Garland County Medical Society. He is a native of Bixby, Oklahoma, and he received his pre-medical education from Northeastern State College in Tahlequah, Oklahoma. He obtained his M.D. degree from the University of Oklahoma Medical School in 1953, and interned at John Sealy Hospital, University of Texas Medical Branch in Galveston, Texas. He has practiced at Tulsa, Oklahoma, and Milwaukee, Wisconsin. His specialty is anesthesiology. Dr. Devine's office address is 236 Woodbine in Hot Springs, Arkansas.

A new member of Jefferson County Medical Society is DR. DONALD L. MILLER. He was born at Little Rock and received his preliminary education from Hendrix College and Arkansas State Teachers College. In 1954, he received his M.D. degree from the University of Arkansas School of Medicine and he interned at University of Arkansas Medical Center. He served in the U.S. Air Force from 1955-1957; he practiced in Roseville, California, from 1960-1962, and was with the Arkansas State Board of Health from 1962-1964. Dr. Miller's specialty is internal medicine and his office address is 1007 Cherry in Pine Bluff, Arkansas.

Jefferson County Medical Society announces that DR. MICHAEL ELLIS is a new member. A native of Marshall, Texas, he received a B.S. degree from Centenary College in Shreveport, Louisiana, before entering Tulane University School of Medicine. He received his M.D. degree from Tulane in 1960 and he completed his internship at Confederate Memorial Medical Center in Shreveport, Louisiana. Dr. Ellis' specialty is pathology and his office is at Jefferson Hospital in Pine Bluff, Arkansas.

DR. BANKS BLACKWELL is a new member of the Jefferson County Medical Society. He was born at Boston, Massachusetts, and he received a B.S. degree from Tulane University in 1956. In 1959, he was graduated from Tulane University School of Medicine and he interned at Touro Infirmary in New Orleans, Louisiana. Dr. Blackwell's office is at 1111 Cherry Street in Pine Bluff, Arkansas. His specialty is orthopaedic surgery.

A new member of Pulaski County Medical Society is DR. LESTER K. AUSTIN, JR., a native of Little Rock. He obtained his pre-medical education from Hendrix College and then he entered the University of Arkansas School of Medicine. He received his M.D. degree in 1959 and he then interned at the University of Arkansas Medical Center. He served in the U. S. Air Force from 1960-1962. Dr. Austin's specialty is pediatrics and his office address is 802 North University in Little Rock, Arkansas.

Sebastian County Medical Society announces that DR. SAMUEL E. LAUDRUM has been added to its roster of members. He is a native of Martin, Tennessee, and he received his preliminary education from the University of Tennessee. He was graduated from the University of Tennessee Medical School in 1956, and he served his internship at Druid City Hospital in Tuscaloosa, Alabama. He was in the U. S. Army for two years and was stationed at Ft. Chaffee. Dr. Landrum's specialty is general surgery and his office is located at 314 North Greenwood in Fort Smith, Arkansas.

DR. McDONALD POE, JR. is a new member of Sebastian County Medical Society. A native of Little Rock, he received his preliminary education from the University of Arkansas and in 1955, he received his M.D. degree from the University of Arkansas School of Medicine. He interned at Charity Hospital of Louisiana in New Orleans. He was in the U. S. Army from 1956-1963. Dr. Poe's specialty is internal medicine and his office is at 320 North Greenwood in Fort Smith.

Sebastian County Medical Society announces

that DR. THOMAS HAMILTON RAYMOND is a new member. He was born at Kingman, Arizona, and he received his pre-med from the University of Wichita. In 1958, he received his M.D. degree from the University of Kansas Medical School and he interned at St. Luke's Hospital, Kansas City, Missouri. He served in the armed forces from 1962-1964. Dr. Raymond's office address is 1214 North B Street in Fort Smith. His specialty is otolaryngology.

A new member of Sebastian County Medical Society is DR. THOMAS J. WHITAKER, JR. He is a native of Heber Springs, Arkansas, and he obtained his preliminary education from the University of Arkansas. He was graduated from the University of Arkansas Medical School in 1960 and he interned at Sacramento County Hospital in Sacramento, California. Dr. Whitaker's specialty is obstetrics and gynecology and his office is at 314 North Greenwood in Fort Smith, Arkansas.

DR. CLAUDE ELBERT FENDLEY is a new member of Jefferson County Medical Society. He was born at Leslie, Arkansas, and received his pre-med from the University of Arkansas. He then enrolled at the University of Arkansas School of Medicine and was graduated from there in 1959. He served his internship at Tampa General Hospital in Tampa, Florida, and he was in the U.S. Navy from 1962-1963. Dr. Fendley is a radiologist and his office address is 1108½ Poplar in Pine Bluff, Arkansas.

Garland County Medical Society announces that DR. JOHN L. HAGGARD is a new member. A native of Glenwood, Arkansas, he attended Henderson State Teachers College in Arkadelphia and received a B.A. degree. He was graduated from the University of Arkansas School of Medicine in 1958 and interned at Arkansas Baptist Hospital in Little Rock, Arkansas. He served in the U. S. Army from 1959-1961. Dr. Haggard's office address is 101 Whittington Avenue in Hot Springs, Arkansas. He specializes in obstetrics and gynecology.

DR. JACK STEPHENSON is a new member of Union County Medical Society. He was born at Okemah, Oklahoma, and received his premedical education from Oklahoma State University at Stillwater. He received his M.D. degree from the University of Oklahoma School of Medicine in 1957 and he interned at U.S. Public Health Service Hospital in New Orleans, Louisiana. He served in the Public Health Service from 1962-1964. Dr. Stephenson specializes in pathology and his office address is 443 West Oak in El Dorado, Arkansas.

A new member of Cleburne County Medical Society is DR. JACK V. SHARP. He is a native of Sheldon, Missouri, and received his preliminary education from Wichita State University in Wichita, Kansas. He was graduated from the University of Kansas Medical School in 1942 and served his internship at St. Louis City Hospital in St. Louis, Missouri. He served in the armed forces of the United States from 1943-1946. He practiced in Arkansas City, Kansas for sixteen years. Dr. Sharp is a general practitioner and his office address is 301 West Searcy Street in Heber Springs, Arkansas.

Cleburne County Medical Society announces that DR. MICHAEL ELMO BARNETT is a new member. A native of Heber Springs, Arkansas, he received his pre-med at Arkansas State Teachers College. From there he entered the University of Arkansas School of Medicine and received his M.D. degree in 1963 and he interned at St. Vincents Infirmary in Little Rock. Dr. Barnett's office address is Fourth and Spring Streets in Heber Springs, Arkansas. He is a general practitioner.

DR. WILLIAMS COGHLAN HOLMES, JR. has been added to the roster of members of the Sebastian County Medical Society. He was born at Mobile, Alabama, and received his preliminary education from the University of Alabama. In 1956, he received his M.D. degree from the Medical College of Alabama. He served his internship at Confederate Memorial Medical Center. Dr. Holmes' specialty is thoracic, vascular and general surgery and his office address is 100 South 14th Street in Fort Smith, Arkansas.

Sebastian County Medical Society announces that DR. HAROLD H. MINGS is a new member. He is a native of LeFlore, Oklahoma, and his premed was obtained from the University of Oklahoma. He received his M.D. degree from the University of Oklahoma School of Medicine in 1957.

Dr. Mings' specialty is general surgery and his office address is 1500 Dodson Avenue, Fort Smith, Arkansas.

A new member of Pulaski County Medical Society is DR. JOHN HALL BOWKER. He was born at Springfield, Massachusetts, and received his preliminary education at New York State College. He then entered the Albany Medical College in Albany, New York, from which he was graduated in 1956. He interned at Royal Hospital in Sheffield, England. He served two years in the U. S. Navy. Dr. Bowker's specialty is orthopedic surgery and he is at the University of Arkansas Medical Center in Little Rock.

DR. ESMOND BRAUN is a new member of Pulaski County Medical Society. He is a native of Detroit, Michigan, where he attended high school. He received a B.S. degree from Wayne State University and he was graduated from Wayne State University School of Medicine in Detroit in 1955. He completed his internship at Wayne County General Hospital at Eloise, Michigan, and he served in the U. S. Air Force. Dr. Braun's specialty is urology and he is at the University of Arkansas Medical Center.

Pulaski County Medical Society announces that DR. COY DEAN FITCH is a new member. He was born at Marthaville, Louisiana, and received his pre-med from the University of Arkansas. He received his M.D. degree from the University of Arkansas Medical School in 1958 and interned at the University of Arkansas Medical Center. Dr. Fitch is at the University of Arkansas Medical Center and his specialty is internal medicine.

DR. FERDINAND ERNEST GREIFENSTEIN is a new member of Pulaski County Medical Society. A native of Newark, New Jersey, he received his preliminary education from Rutgers College of Pharmacy in New Brunswick, New Jersey, and from Spring Hill College in Mobile, Alabama. He received his M.D. degree from St. Louis University School of Medicine in 1944. He interned at Flower Fifth Avenue Hospital in New York City. Dr. Greifenstein's specialty is anesthesiology and he is at the University of Arkansas Medical Center.

Pulaski County Medical Society announces that DR. HOWARD QUITTNER has been added to its roster of members. He was born at Brooklyn, New York, and he attended high school there. He received his preliminary education from New York University and Tulane University. In 1944 he was graduated from Tulane University School of Medicine in New Orleans, Louisiana. He interned at Green Point Hospital in Brooklyn, New York. Dr. Quittner specializes in clinical pathology and he is at the University of Arkansas Medical Center in Little Rock.

DR. CHARLES EDWARD CAMPBELL, JR. is a new member of Mississippi County Medical Society. He is a native of Memphis, Tennessee, and he received his pre-med at the University of Tennessee. His M.D. degree was obtained from the University of Tennessee College of Medicine in 1955. He served his internship at John Gaston Hospital in Memphis and was in the U. S. Army from 1957 until 1959. He practiced in Ripley, Tennessee from 1959 until 1960. Dr. Campbell's specialty is urology and his office is 519 North Sixth Street in Blytheville, Arkansas.

A new member of the Washington County Medical Society is DR. LEO DEXTER THOMAS. He was born at Stillwater, Oklahoma, and received his pre-medical education from Oklahoma State University. He then enrolled at the University of Oklahoma Medical School and graduated from there in 1956. He completed his internship at Wesley Hospital in Oklahoma City and served in the U. S. Public Health Service from 1959 until 1961. He practiced for one year in Tulsa, Oklahoma. Dr. Thomas is a radiologist and his office is at Washington General Hospital in Fayetteville, Arkansas.

Benton County Medical Society announces that DR. DONALD D. WEAVER is a new member. He is a native of Portland, Oregon, and he received his preliminary education from Walla Walla College in Washington. In 1960 he received his M.D. degree from Loma Linda University in Loma Linda, California, and served his internship at Deaconess Hospital in Spokane, Washington. He practiced at Coulee Dam, Washington, from 1961 until 1963 and at Sandpoint, Idaho, from 1963 until 1964. Dr. Weaver is a general practitioner and his office is on Main Street in Gentry, Arkansas.

Garland County Medical Society announces that DR. SHIRLEY M. McCLUER has been added to its roster of members. She is a native of New Orleans, Louisiana, and received her pre-med at Louisiana State University in Baton Rouge. She received her M.D. degree in 1952 from Louisiana State University Medical School in New Orleans; she interned at Wilmington General Hospital in Wilmington, Delaware. She practiced at Montebello State Hospital in Baltimore, Maryland, from 1958-1960; at University of Alberta Hospital, Edmonton, Alberta, Canada, from 1960-1961; at University of Cologne Neurology Clinic, Cologne, Germany, from 1961-1962; at Glenn Dale Hospital, Glenn Dale, Maryland, from 1962-1964. Dr. McCluer's specialty is physical medicine and rehabilitation and her office is at Hot Springs Rehabilitation Center in Hot Springs, Arkansas.

DR. JOHN JAMES SMITH is a new member of Logan County Medical Society. He is a native of Paris, Arkansas, and he received his pre-medical education from Mississippi State College from which he obtained a B.S. degree. He then enrolled at Tulane University Medical School from which he was graduated in 1956. He served his internship at Touro Infirmary in New Orleans, Louisiana, from 1956 until 1957 and he was in residency training from 1958 until 1961. From 1961 until 1964 he was in the U. S. Air Force. Dr. Smith's specialty is general surgery and general medicine and his office address is 710 North Express Street in Paris, Arkansas.

Baxter County Medical Society announces that DR. EUGENE HILDEBRAND is a new member. He was born at Chicago and received his preliminary education from Northwestern University in Evanston, Illinois. He received his M.D. degree from Northwestern University Medical School in 1940. He completed his internship at Passavant Memorial Hospital in Chicago. Dr. Hildebrand served in the armed forces of the United States from 1942 until 1944. He has practiced in Chicago, Illinois; Great Falls, Montana; and Denver, Colorado. His specialty is pathology and he is now practicing in Mountain Home, Arkansas.

A new member of Logan County Medical Society is DR. JAMES L. MAUPIN. He is a native of Pine Bluff and received his preliminary education from the University of Arkansas. His M.D. degree was received from the University of Arkansas School of Medicine in 1961 and he served his internship at Arkansas Baptist Hospital in Little Rock, Arkansas. He served in the United States Navy from 1943 until 1950. Dr. Maupin has practiced in England, Arkansas, and he is now at State Sanatorium, Arkansas. He is a general practitioner.

Chicot County Medical Society announces that DR. JAMES DONALD HARBISON has been added to its roster of members. A native of Lake Village, Arkansas, he received his pre-med from the University of Alabama at Tuscaloosa, Alabama. He then entered the University of Arkansas School of Medicine from which he received his M.D. degree in 1962. Dr. Harbison is a general practitioner and his office is at Lake Village Infirmary in Lake Village, Arkansas.

DR. JOHN WERNER TRIESCHMANN is a new member of Garland County Medical Society. He was born at Little Rock, Arkansas, and he received his preliminary education from Hendrix College. He received his M.D. degree in 1961 from the University of Arkansas Medical School and he interned at University of Kansas Medical Center in Kansas City, Kansas. Dr. Trieschmann is a pediatrician and his office address is 236 Woodbine in Hot Springs, Arkansas.



BOOK REVIEWS

COMMON BACTERIAL INFECTIONS, Pathophysiology and Clinical Management, by Edwin J. Pulaski, Col., MC, U.S. Army, Director, Division of Basic Surgical Research, Institute of Research, Walter Reed Army Medical Center, Washington, D.C., pp. 301, illustrated, published by W. B. Saunders Company, Philadelphia and London, 1964.

Col. Pulaski is an outstanding authority on bacterial infections. This book summarizes some of the more recent information available on this subject.

The book is organized so that there are chapters which include the following and others: Dynamics of Infection, Antimicrobial Therapy, Trauma and Infection, Burns and Infection, Bacteremia and Septicemia. There are also excellent discussions on acute infections of different areas of the body as the skin, abdomen, nervous system, chest, etc. Perhaps in the ordinary practice of medicine the most

important chapter is Infections of the Urinary Tract which is fairly well covered but is rather brief in comparison to the others. The book is clinically oriented and the treatment suggestions are top flight. This book is recommended as an ancillary text for medical students, house staff, and all physicians. AK

VASCULAR ROENTGENOLOGY, Arteriography, Phlebography, Lymphography, Edited by Robert A. Schobinger, M.D., Department of Surgery, Clinic St. Anna, Lucerne, Switzerland, and Francis F. Ruzicka, Jr., M.D., Department of Radiology, The St. Vincent's Hospital and Medical Center, New York, Clinical Professor of Radiology, New York University School of Medicine, New York, pp. 747, illustrated, published by The Macmillan Company, New York and Collier-Macmillan Limited, London, 1964.

This is a highly specialized book, beautifully illustrated, well written, and inclusive. It is of great interest to the practicing physician and house staff member as a reference manual. It will be of extreme interest as a compendium for the radiologist. As a specialized textbook this is one of the finest published. It is edited by Dr. Robert A. Schobinger and Dr. Francis F. Ruzicka, Jr. The chapters are written by various well known authors. It is heartily recommended as a reference book. AK

Effect of Chronic Alcoholism and Cirrhosis on Atheorosclerosis

A. E. Hirst, G. G. Hadley, and I. Gore (Loma Linda University, Loma Linda, Calif) *Amer J Med Sci* 249:143 (Feb) 1965

Atherosclerosis and myocardial infarction were compared in 65 cases of chronic alcoholism without cirrhosis and in 107 cases of cirrhosis of the liver with or without chronic alcoholism, encountered in 868 necropsies on individuals between the ages of 40 and 89 at the Los Angeles County hospitals. The entire group served as a control. Severe degrees of coronary narrowing (51% to 99%) were encountered in 21.7% of males with cirrhosis, but in 28% of controls; coronary occlusion was encountered in only 4.3% of males with cirrhosis, but in 19.7% of controls; myocardial infarction occurred in 5.8% of males with cirrhosis and in 25.4% of controls. The apparent protection in males with cirrhosis was not shared by males with chronic alcoholism, but without cirrhosis, who had essentially the same frequency of severe coronary narrowing (30.2%), coronary occlusion (17.0%), and myocardial infarction (24.5%) as the control group. The data do not suggest that alcohol inhibits atherosclerosis, but rather that cirrhosis may be protective, presumably due to its effect on estrogen metabolism or blood coagulation, or both.

Oxygen Cost of Work When the Body Weight Is Not Lifted Against Gravity

W. R. Pierson and G. Q. Rich (Lockheed California Co, Northridge, Calif) *Aerospace Med* 36:44-46 (Jan) 1965

(Lockheed California Co, Northridge, Calif)

Aerospace Med 36:44-46 (Jan) 1965

An exercise program wherein the body was not lifted against gravity was administered to 24 male college students. Oxygen consumption rates were measured during rest, exercise, and recovery to resting levels. At no time did the oxygen consumption exceed that associated with "light" work, but for the nine minutes of exercise, over five minutes were required for the return to resting level. There was no relationship between oxygen consumption and total body weight or surface area.

Effect of Dexamethasone on Mitochondria in the Anoxic Brain

E. E. Blinderman (University of California Medical Center, Los Angeles) *Arch Neurol* 12:278 (March) 1965

In order to find a possible site of action of dexamethasone in cerebral edema, a histochemical system was studied. A rate reaction of a reduced nucleotide and a tetrazolium salt was used to identify the damage to the cellular mitochondria before it could be seen with conventional staining. By use of this technique, an increased rate of staining was found in the anoxic cortical gray matter as compared to the controls. The rate-limiting factor in the staining reaction was believed to be the state of the mitochondrial membrane. By pretreating the anoxic animals with dexamethasone, it was possible to alter the rate of staining so that it approached that of the normal controls. It is concluded that the lipoprotein mitochondrial membrane may be a possible site of action of dexamethasone in cerebral edema.

TUBERCULOSIS  ABSTRACTS

Sponsored by Arkansas Tuberculosis Association

TETRAETHYL PYROPHOSPHATE POISONING FOLLOWING AIRPLANE DUSTING

Both humans and cattle had respiratory distress following TEPP dusting of crops during a thermal inversion in the State of Washington. The several factors involved are discussed.

Despite reports of human poisoning caused by drifting pesticides, scientifically acceptable evidence has not been published showing that the drift of the newer organic phosphorous insecticides has produced poisoning clearly recognizable.

The purpose of this paper is to report two outbreaks of poisoning which occurred in the state of Washington in 1963 following the dusting of two different crops with tetraethyl pyrophosphate (TEPP).

In the first instance, two planes of a commercial pesticide applicator alternately dusted 46 acres of a vineyard of hops near Toppenish, Wash., with 1 per cent TEPP dust in a manner similar to that used for the past 16 years.

A thermal inversion existed during the application so that the dust settled into the 20-foot-high hop vines. Some drifted at least 700 feet beyond the vineyard over adjacent pastures, corn, and other crops, and over houses. The dust hung in the air and drifted slowly away from the swathes being laid down by the planes flying and loading alternately. It did not lift for almost two hours.

While it is not unusual for insecticides to be applied by aircraft during a thermal inversion, it is unusual for an inversion to cause such still air for so long. The cloud of dust over one house was so dense that it was not visible approximately 300 yards away. Except for the prolonged thermal inversion, this application appeared to differ in no way from those of past years.

GRIFFITH E. QUINBY, M.D., MPH and GLENN, M. DOORNINK, M.D., *Journal of the American Medical Association*, January 4, 1965.

TWO CATTLE DIE

The owner of one farm noted that the cattle began to cough so soon after the dust cloud settled over the pasture that there was not time for the cattle to have eaten TEPP dust on the grass. Two heifers, found down within 50 feet of his home, started convulsing and died within the second hour after onset. Some degree of cyanosis was noted in the tongues of other cattle. The cattle were observed to stagger when they moved and several fell briefly to their knees. The signs were consistent with both topical and systemic poisoning with TEPP.

The 8-year-old son of the farmer, playing on the lawn, became so short of breath he went into the house and complained to his mother.

Subsequent investigation in the area brought to 15 the number of people known to have had shortness of breath or tightness in chest. All but three had completely recovered before leaving the area or before arrival at the hospital. The three with residual shortness of breath were hospitalized overnight. No treatment was required for any.

The sheriff's office was advised to have all persons showing any effects taken to the local hospital. A total of 41 persons were examined in the emergency room in addition to five who were examined in the field.

CLINICAL PICTURE

The clinical pattern of this type of poisoning has been seen frequently in occupationally exposed persons such as flaggers, pilots, loaders, and other workers breathing TEPP dust.

The people in this outbreak described their experience as follows: the first complaint was usually the sweetish smell (ethyl esters) of the TEPP followed by dryness of the throat (talc) with a bad taste. Coughing usually followed promptly but was sometimes the presenting sign. After breathing the dust-laden air for about 30 minutes, victims noted tightness in the throat or chest followed by shortness of breath.

These symptoms are the result of bronchiolar constriction probably caused by the direct action on the muscles of the bronchioles of the inspired TEPP dust or vapors. The fact that none-developed pinpoint pupils suggests that most of the TEPP vaporized from the dust before it could reach the eyes. No one complained of visual difficulties except for dust.

Blood cholinesterase activities among eight tested remained essentially within normal limits.

A similar, smaller outbreak involving man and cattle occurred about two weeks later four miles north of Wenatchee, Wash. An orchard was dusted with TEPP under almost static air conditions that allowed the dust to remain in the area about two hours. A man and his wife and their heifer developed respiratory symptoms. The animal "foamed at the mouth" and breathed with difficulty. The symptoms in the people disappeared in about two hours.

Although the cattle may have been more heavily exposed than the humans, available facts do not explain why cattle developed systemic poisoning and the humans and other animals did not.

A possible explanation is the relatively lower blood cholinesterase activities of cattle. Their red cell cholinesterase levels normally average only about two thirds of man, and cattle plasma activities are almost absent. These differences might influence the buffering action of the blood in combining with absorbed TEPP. Furthermore, cattle tend to be excited by airplane application and in their heavier breathing may have inspired relatively more TEPP than humans.

SEVERAL FACTORS

The absence of reports of outbreaks of this type of poisoning from drift of TEPP makes it unlikely that the cause has been any single factor. It appears more probable than an infrequent combination of several factors is required to trap dust-laden air in pockets for periods long enough to cause people in the area of drift to breathe enough TEPP to make them short of breath. These factors are (1) thermal inversion and consequent static air conditions for longer than an hour over a considerable area; (2) topography of land causing interference with even, slow movement of dust-laden air; and (3) tall-growing crops with dense foliage constituting walls of vegetation located on such terrain.

Increased alertness on the part of industry, agriculture agencies, departments of public health, and the medical profession may be all that is required to prevent frequent or more serious recurrence of such episodes. Whenever clouds of TEPP dust tend to concentrate or remain static longer than usual, people should be urged to remove themselves and their cattle until the cloud has disappeared.



Myocardial Revascularization by Omental Graft Without Pedicle: Experimental Background Report on 25 Cases Followed 6 to 16 Months

A. M. Vineberg et al (Royal Victoria Hosp, Montreal) *J. Thor Cardiov Surg* 49:103-129 (Jan) 1965

The internal mammary artery implant was the first by-pass operation developed by the authors. The free omental graft operation aims at revascularizing the entire heart either alone or in combination with the internal mammary artery implant. The omental graft operation is a free detached graft without pedicle. In experiments on animals it became clear that the detached omental graft forms anastomotic capillary channels with surrounding tissues within three days and arteriolar-sized channels within eight days. It preserves life when all three coronary arteries are occluded in the animal. The presence of the free omental graft in no way interferes with the internal mammary artery implant so that they can be combined. The authors performed the free omental graft operation in 36 patients, and in 29 of these they combined it with internal mammary artery implantation. This combination would appear to approach an ideal revascularization procedure in which hundreds of new arterioles develop rapidly to bypass points of coronary artery occlusion, with a total blood flow that might exceed the flow in normal coronary arteries. The likelihood of failure is considerably reduced over that with other procedures.

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